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TACTICAL DEDUCTIONS

FROM THE

WAR OF 1870-71

BY

A. v. BOGUSLAWSKI

CAPTAIN AND COMPANY-CHIEF IN THE 3RD LOWER SILESIAN INFANTRY REGIMENT NO. 50

TRANSLATED from the GERMAN

BY COLONEL LUMLEY GRAHAM

LATE 18TH (ROYAL IRISH) REGIMENT

LONDON

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PREFACE.

WHEN I, for the first time, published a work in 1869, there were ample materials for forming an opinion upon the tactics of the campaigns from 1859 to 1866, and upon the manner in which battles were fought during that period. As this cannot yet be the case with regard to the war of 1870–71, criticism must be restricted to a judgment upon the most notorious facts. Therefore my statements will perhaps receive corrections, which I shall willingly accept and make full use of.

But I do not aim now at writing a history.

The principal task which I have undertaken is to describe the peculiarities to be noticed in the late battles, in which, for the first time, the infantry of both armies used a breechloader, and hence to draw conclusions for the tactics of the present day.

The sketch which will be found at the beginning of the volume of the history of the French and German armies may give the reader an idea in a few words of their tactics, organization, and prevailing tone.

Strategy and tactics are, as a rule, so intimately connected, that I have thought it necessary to add a general sketch of the operations and of the character of the war.

I wrote this book as a regimental officer. The short historical part of it cannot therefore, particularly so soon after the war, be of the same value as if written by an officer who, thanks to his

position during the occurrences described, had gained a gener view of the 'ensemble' of the operations; and who, perhap had access to materials which, by the revelation of new fact present some matters in a different light. Moreover, as yet, th materials are rather one-sided, as but few trustworthy accoun have hitherto been obtained from the French, particularly of th period after Sedan.

But, with regard to the mode of fighting and to tactic details, it appears incontestable that the regimental officer ough to be able to give the best information. This will be all the mo useful because the characteristic features of the warfare of th present day, particularly as regards infantry, are often n touched upon in military reports, and are unnoticed by some the numerous writers upon the war, whilst others only try t present to the public a series of striking pictures, which are ofte very unlike nature.

These considerations induce me not to delay the publicatio of the following 'Deductions,' which were written when under th fresh impression of the occurrences whence they spring.

October, 1871.

TRANSLATOR'S PREFACE.

A GREAT many important tactical points are under discussion; infantry tactics especially are in a state of transition, and the opinions of professional men are still much divided as to what alterations have been rendered necessary by the great improvements in firearms introduced of late years. We in England have no practical experience in the matter, not having had the advantage of being engaged in any great war since rifled muskets and cannon, not to mention breechloaders and mitrailleuses, came into general use. We must consequently draw largely upon the experience of other nations more fortunate (in a military sense); by which experience, it is to be hoped, we shall have profited, when it comes to our turn to enter the arena. I trust that all my countrymen who understand German, and are interested in military matters, will read 'Tactical Deductions' in the original, and that the following translation will give those who cannot have this advantage, a fair rendering of the work.

The author's regiment belongs to the 5th Army Corps, which played a very distinguished part in the late war. He served with it throughout, and saw plenty of hard fighting. Being evidently an acute observer, and in the habit of reflecting upon what he saw, his impressions of the tactical conduct of the war and of the tactical requirements of the age are interesting and

valuable to the military student; particularly as regards the action of infantry, the principal arm, and that to which the author belongs.

Soldiers of all nations will learn useful lessons from a study of Captain v. Boguslawski's book. I will briefly point out some of these lessons, which appear at this moment to be specially applicable to the British army.

INFANTRY IN BATTLE.

The main work of battle is done now-a-days by infantry in extended order. Preparatory movements under artillery fire, or under very distant musketry fire, can and should be executed in close order, but, under about 800 yards' distance from the enemy, the first line of infantry when on the offensive must resolve itself into skirmishers, unless exceptionally favoured by the ground. On the defensive, in well-covered positions, infantry may still remain in close order as long as they are not required to move; but, as a purely passive defence is injudicious, and likely in the long run to be fatal to the defenders, they must always be prepared in their turn to assume the offensive, in which case they will act in extended order. In Germany, as in England, the military authorities have been loth to relinquish the many undeniable advantages of close order formations, where such are possible; but, in the former country, the rough conditions of actual war, both in 1866 and in 1870-71, were too strong for official instructions and drill regulations.

Fortunately for the Germans, the intelligence, the high standard of professional instruction and of discipline in their army, enabled it to depart from these regulations, and to adapt its system of fighting to the actual requirements of modern warfare with great success; still it is evident, that the state of things

would have been still better had the principles forced upon the Germans by war been previously recognized by their chiefs during peace. Let us hope that our own authorities will adopt these principles in good time, and that when next we take the field we shall have the advantage of having been thoroughly trained to fight in a manner suitable to present warfare, instead of adhering to a system which our fathers practised with great success in the wars at the beginning of this century, but which is now obsolete. Our habit of fighting in line, two-deep, contributed greatly to our victories over the French, who fought in dense columns; but unfortunately our future enemies, whoever they may be, will certainly not be foolish enough to act thus; they will engage us with clouds of skirmishers, against which our lines would have a bad chance.

Therefore, I think, the sooner we adopt the principle that formations in extended order are the rule, and those in close order the exception, in actual battle, the better will it be for us. The solidity, coolness, discipline, and steadiness of the British soldier, on which we justly pride ourselves, will be as valuable qualities as ever, nay, even more valuable, for in no sort of fighting are they so much needed as in that of skirmishers, particularly when these are used on as large a scale as they are now used in great wars.

Add to these qualities, individual self-reliance, intelligence, and thorough instruction on the part of subordinate officers and men, and we have all the materials necessary for good skirmishers. All these qualities may be easily developed in our army, for there is an excellent foundation to work upon; but at present some of them are rather in a dormant state, and in this state they will remain, unless the great principle above enunciated be recognized, and our system of drill and manœuvre modified accordingly. Hitherto we have turned our

attention principally to movements in close order, and the system of drill is, as far as these go, in my opinion, superior to that of any continental army with which I am acquainted, and probably no infantry manœuvres in close order better than ours but our instruction in skirmishing has hitherto been very incomplete in all ranks. This is not the place to enter into minute details, but I will indicate briefly the main points which appear to me to require amendment.

1. The whole drill is carried on too much in the barrack square, or, when out of it, in barrack square fashion.

2. Skirmishers are not properly trained to take advantage of the ground.

3. There is too much interference with the individual; hence the qualities of self-reliance and intelligence are not developed as they might be.

4. Supports are not properly used, but play too passive a part in the game.

5. In consequence of the erroneous principle being still maintained, that skirmishers only play a secondary part in battle, and that the masses in close order will give the decisive blow, the former are ordered to 'conform' to the movements of the latter and to 'cover' their advance; whilst the contrary should be the case, the latter should follow the former, assisting them whenever practicable, keeping as much under cover as they can, and as little massed as possible.

6. Field-officers are told off to command lines of skirmishers This they can do to a certain extent on open ground at peace manœuvres, not even then if the ground is much broken; but in war no mounted officer can remain in the front line of battle now-a-days, unless under very exceptional circumstances; a field officer on foot is, however, of little use as such; hence the captains must be left to themselves, as they should be always in

skirmishing, receiving of course general directions from their superiors, and this makes captains of much greater importance in modern war than they were formerly, a subject to which I shall return further on.

7. The English system of sending out a whole company to skirmish at first starting, instead of forming a line of skirmishers from several different companies, as is customary in Germany, seems the better one, as Captain v. Boguslawski appears to think; but, as he points out forcibly, it is also necessary to accustom men to work amidst a medley of soldiers strange to them, so as to be able to maintain order in disorder, such situations being common in war.

8. The Prussian company column is an excellent institution, and should be introduced into our service, though in a somewhat modified form.

9. We make too much of cavalry when skirmishing. Skirmishers may generally keep extended when threatened by horsemen, or they may partially close, according to the nature of the ground, but it will be rarely necessary for them to form square, and certainly the sight, so pretty and so common at our field-days, of supports moving up into echelon in columns of half companies, whilst the skirmishers run in and form upon them, and the reserve also advances and forms a separate square, will never be witnessed in real earnest. Let us then banish from our drill book this, and all other unpractical movements, which may be picturesque but are positively pernicious, because they give our young soldiers false ideas of war.

10. Our excellent system of musketry instruction, the exertions of that valuable body of men the musketry instructors, and the possession of very good firearms, have increased the power of our infantry fire to an incalculable degree over what it was in the old days when the French called it 'épouvantable;'

but I think we have been getting on a wrong track of late years, and thereby have to a certain extent reduced these elements of superiority. We have too great a tendency to shooting at long ranges, a practice to which men are liable to be tempted by the possession of a far-ranging rifle, but which should be discouraged as much as possible. The reader will find the subject much enlarged upon by our author; and the pernicious effects of this practice were as fully demonstrated by its results to the French, as was the advantage of the contrary system proved by the Germans in the late war.

There is no subject in which officers and soldiers require such careful instruction as in what our author calls 'fire-discipline;' the former learning how to direct to the best advantage, and at need control, the fire of their men; the latter being so thoroughly trained and disciplined as to understand the necessity for economizing ammunition, and to act up to this understanding by firing as little as possible. It is not *much* shooting, but *good* shooting, which is effective. Rapid fire is rarely necessary for more than a few minutes.

Particular instructions should be laid down in our drill book as to the maximum ranges for fire on individuals, lines, and columns, as well as on batteries of artillery and on cavalry. Firing should not, unless under very exceptional circumstances, be permitted at ranges requiring the use of the elevating sight, except in the case of picked marksmen.

These principles should be strictly adhered to at all our drills, manœuvres, and sham fights. The fire of skirmishers is that which will be the most frequently employed in war, and should therefore be the most practised in peace. Next in importance comes what we call independent firing; and, last of all, the volley, which, as our author shows, is rarely possible, however desirable. There, again, the German authorities agreed with our own in

setting great value upon this description of fire, but unless you can employ troops in close order you cannot fire volleys; hence, in present warfare, the opportunities for doing so are few and far between. This subject should be considered carefully, with a view to assigning to each description of fire its proper degree of importance, and of instructing our troops accordingly; but above all the golden rule, 'Reserve your fire for close quarters,' should be, as it were, tattooed upon our brains. By acting up to the rule, British fire with Brown Bess and with hardly any musketry instruction, was 'épouvantable;' if we still adhere to it, with the advantage of the annual course and the Martini-Henry, no adjective in any language will be sufficiently strong to characterize the effects of our fire. We must resort to another French expression, 'feu d'enfer,' to describe it.

CAPTAINS.

As I have already remarked, captains play a much more important part in war than they did formerly. A necessary consequence of fighting so much in extended order is the employment of a smaller tactical unit than the battalion; hence in close action the Germans work by companies, the captain being virtually commanding officer of a little independent body. Every army which adopts the Prussian system of infantry tactics (I don't mean that to be found in the regulations, but that carried out in practice), and I think all armies will be compelled to do so, every army, I say, will also find it necessary to increase the power, responsibility, and independence of action of the captain.

In our service these officers are, I think, made much too little of. Their importance should be raised, and that of the regimental adjutant diminished. The latter should be only the

aide-de-camp, secretary, and staff officer of the commanding officer, whilst the captains should be *really*, not only *nominally*, responsible for everything which concerns both the officers and men under them. There should be no interference whatever with a company, or any member of it, except through the captain. Thus, and thus alone, can we expect a captain to be looked up to by his men as the 'company-chief' and 'company-father.' No part of the Prussian organization is more deserving of admiration and imitation than their whole company system, and it is essential to a successful adoption of their tactics. I should not, however, be in favour of making our companies as strong as are those of Prussia (on the war footing, 254 of all ranks, including five officers). I should prefer a war establishment of 170 of all ranks, including four officers. Six such companies would make a nice battalion.

The above remarks as to the necessity of raising the position of a captain in our service apply to our reserve forces even more, and very much more, than they do to the regulars.

FIELD WORKS.

The construction of shelter trenches and rifle-pits is now deemed of much importance in our service.

It is doubtless advisable to train all our men to the use of pick and shovel, and to instruct every infantry officer in planning and directing the execution of field-works of every description; but we must beware lest we injure the *morale* of our army by making too much use of such works. Though of a defensive nature themselves, the troops told off to construct and to occupy them must thoroughly understand that they are only intended to give cover till the favourable moment comes for resuming the offensive, and they must always be traced in such a manner as

obviously influenced by the French concept of élan
that caused the massed killing of WWI

ot to impede the advance of the defenders and of their reserves vhen the moment for action comes. In short, the idea of a nere passive defence should be scouted.

MITRAILLEUSES.

Captain v. Boguslawski has a very poor opinion of mitrailleuses. Perhaps it would have been more favourable if the French had made a proper use of these engines, instead of pitting them, as they often did, against the Prussian artillery. I believe there are many positions in which mitrailleuses, or a kindred arm, will be of great value, and it is well that a weapon of this nature has been introduced into our service.

CAVALRY.

The importance of a proper system of training for cavalry in peace time and of its suitable distribution in war is forcibly pointed out in the following pages. The value of the arm is fully as great as it ever has been since the introduction of fire-arms, its *chief* vocation being now, however, not to fight, but to secure the army from surprise, to cover its operations preparatory and subsequent to battle, to reconnoitre, to gain information, and to harass the enemy. The best materials and the highest standard of training, discipline, and instruction are requisite to enable cavalry to perform such duties effectively; and our officers cannot do better than take careful note of the performances of the German horsemen in France. Cavalry should be accustomed to skirmish on foot, so that at need they may be able to engage infantry in broken ground.

It appears advisable to attach a cavalry regiment to each infantry division on service, and to form the rest of the cavalry

into independent brigades or divisions. Our cavalry regiments, to be efficient in war, should be much stronger than they are.

RESERVES.

The value of a well organized system of reserves was never before so clearly demonstrated as in the war of 1870–71. And the superiority of discipline and training over mere numbers was never more forcibly shown than in the sieges of Paris and Metz, and in the whole of the operations in the latter part of the campaign. From this we may deduce, even if we had not previously arrived at the conclusion from the experience of former wars, that an army on a peace footing should always have sufficient reserves at hand to place it on a war footing at short notice, and to maintain its effective strength throughout the period of hostilities ; moreover, that these reserves should mainly consist of soldiers who have served their time with the colours. If we wish to have an army capable of holding its own out of our own country, I see no choice between maintaining such reserves and keeping our army constantly on a war footing. The latter course is impracticable. The former course has been decided upon, but with our military institutions it will take some years before anything like a sufficient reserve of trained soldiers is provided. Let us hope that every available means will be taken to further this important object.

As for our other reserves, our home army of militia and volunteers, although their efficiency, particularly that of the former, promises to be greatly increased, I doubt whether partially trained troops, such as they at the best can only be, will ever be fit to cope with good regular troops in the great skirmishing battles of the present day ; for there can be no doubt that this style of fighting requires a far greater perfection of

training, discipline, and military experience on the part of both officers and men, than is required for fighting in close order. Militia and volunteers will, however, render valuable service in garrisoning our fortresses and in the defence of entrenched positions, if we should ever have the misfortune to be invaded. The former may indeed, as they have done before, garrison our Mediterranean strongholds. In peace time both militia and volunteers may be of inestimable advantage in keeping up a military spirit in the country.

THE CORPS OF OFFICERS.

The importance of having a corps of officers recruited from the educated classes, and, with thorough professional training, is nothing new; but it was never more clearly illustrated than by the events of 1870–71. The more thinkers you have in an army (and as education spreads, the more thinkers you will have in the ranks), the greater is the necessity for a high standard of knowledge and general efficiency in the corps of officers; otherwise discipline suffers, for the thinking private will despise an incompetent superior; then, when great trials come, you witness such scenes as those on the retreat from the Vosges and in the town of Sedan. But if the officers know their work and enjoy the confidence of their men, you may see a corps shattered and decimated by a murderous fire, which for the moment checks it, returning to the charge at the voice of its commander without hesitation, as did the Royal Guard of Prussia on August 18, 1870.

In England we have, as they have in Germany, the advantage of a corps of officers taken from the educated classes, an advantage which we shall, I trust, always enjoy; but it cannot be denied that the standard of professional instruction in the

cavalry, infantry, and reserve forces, has not hitherto been as high as it should be.

Happily for us, we are not above being told of our faults; we have recognized our deficiencies, and are as anxious to learn as our military authorities are to give us the opportunity of doing so.

A great reform is in progress, and I look with hope to the future.

LUMLEY GRAHAM, *Colonel,*
Late Major 18th Regiment.

March 8, 1872.

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TACTICAL DEDUCTIONS

FROM

THE WAR OF 1870-71.

I.

A SKETCH OF THE HISTORY OF THE GERMAN AND FRENCH ARMIES.

THE ARMIES which were opposed to one another in the late war are undoubtedly those which have exercised the greatest influence on the development of the art of war in the last two centuries.

In the seventeenth century it was the army of Louis XIV. which took the first place in Europe, owing to its organisation, perfect for those times, to its superior armament, and to the genius of its commanders. Not that the military qualities of the Germans were even then inferior to those of the French, but the powerful homogeneousness of France as opposed to German disunity rendered it possible to create the army which was able to take the field with 250,000 men in the 'Robber war,'[1] and with 400,000 men in the War of Succession. In spite of the enemy's superiority in numbers, German generals such as the Elector of Brandenburg, Montecuculi, and others, generally

[1] By this term the author probably refers to the war which ended with the peace of Ryswick in 1697, and which *robbed* Germany of Alsace and part of Lorraine.—TRANSLATOR.

held their own against Turenne, Condé, and Luxembourg. In the beginning of the eighteenth century, French glory paled before the great Marlborough and Eugène who defeated the second generation of leaders in that long era of Louis' supremacy; able generals like Villars and Vendome, and unworthy favourites of Madame de Maintenon, like Villeroy and Marsin: but the victory was not complete. The House of Austria was a gainer, but Germany's lost provinces remained in the hands of the French. Under Louvois' administration France had formed the first great standing army, from whose tactics and organisation the remains of the feudal system had disappeared. The distribution of the French army, and the arrangements for commanding it are fixed. Infantry gains its modern importance; the pike is done away with; the bayonet introduced. The column formations of the Thirty Years' War make place for the line formations of the eighteenth century. The firearm supersedes 'l'arme blanche.' But cavalry men forget what is the element of their strength, and take to firearms. Vauban founds his system of fortification and attack, which serves for centuries as a model for European armies.

Meanwhile the constellation of the black eagle is rising in the North. Prussian regiments have already assisted, under Prince Eugène, in beating the enemy of the empire at Blenheim, Turin, and Malplaquet; and, whilst, under the leadership of a German Sovereign who despises the French Court system, the Prussian army is gradually preparing to enter single-handed into the arena, French might in war decays under the demoralisation and degeneracy with which the throne infects the whole nation.

French military glory had never sunk so low as in the time of Frederick the Great. Indiscipline, effeminacy, self-contempt pervaded the hosts, commanded by such generals as Clermont and Soubise, opposed to the stubborn Prussians, Hanoverians, Brunswickers, and Hessians, in whose ranks discipline and honour reigned supreme. The discipline and instruction of the army and the genius of the great king open a new era in the art of war.

Prussian infantry gains the victory by rapidity of fire, by its nobility, and by its attack in echelon thereby rendered possible. Cavalry, regaining its true characteristics—the use of the sabre and the charge at full gallop—attains unequalled reputation. The Prussian army becomes the European model. Prussian princes shine beside their king as leaders of the host. Not so in France: the decay of the house of Bourbon betrays itself in nothing more than in its relations to the army.

Henri Quatre himself tore away standards from the ranks of the League. Louis XIII. commanded his own armies. Louis XIV. was often present with his hosts, and showed energy and power of will when the enemy extended his incursions to the neighbourhood of Paris. The Duchess of Châteauroux once tried to make a hero of Louis XV. He joined the army, but the hero went on the sick list at Metz, and allowed two Germans, Marshal Saxe and Count Löwendal, to fight his battles. After this, the Marquise de Pompadour spared him the trouble of selecting generals. Lastly, Louis XVI. never wore the noble garb of a warrior. He was unknown to the army. A deluge overwhelmed this world of crime, corruption, slavery, and weakness, which occupied the site of old France. Out of the forces unchained by the revolution arose anew with vigour the warlike power of the nation. The 'levée en masse' was, under the influence of the foremost spirits of the land and of despair, rendered capable of withstanding the hosts of Austria and Prussia, until the great master-hand created a mighty machine, terrible both on account of the motives which impelled it, and through the new spirit which directed it and guided its labours. Before it fell the ancient power of Austria; before it the army of the great king fell low—that army which had been left, as it were, in a state of orphanhood in presence of the giant. Then also fell in Prussia the system of the eighteenth century, which had outlived its time—the system of mercenary armies and of privilege. But the men who then stood at the head of the army were not nearly a match for Napoleon. As in the time of Frederick the

Great, Europe formed its armies upon the Prussian model, so now France was taken as the example.

The war-system of Napoleon—distribution of the army into army-corps, the combination of the system of requisition with that of contracts, and the celerity thereby imparted to strategic movements, a real combined action of the three arms in battle, the crushing of the enemy's centre by masses of artillery, followed by the powerful strokes of infantry and cavalry, the column and skirmishing tactics of the infantry; these principles were adopted in the reorganisation of European armies.

But Prussia did not content herself with a mere superficial imitation of Napoleon I.'s military institutions. She impressed upon them the old national stamp of her resuscitated state. She surpassed France by forbidding substitution in her army and by making the universal liability to service the groundwork of her military constitution.

Europe arises and dethrones the tyrant. The first share in this task falls to the lot of the Prussians. They have, combined with the English, the good fortune and the honour to defeat Napoleon's host in 1815, and to give a long peace to Europe. But on that occasion all Europe was in arms against France, so that the impression of defeat was thereby much lessened. Prussia's just pretensions being as much as possible set aside she retains in the general liability to service, which she keeps unaltered in contradistinction to France, Austria, and Russia, the means of taking a tardy but more complete revenge.

By transplanting the old Prussian spirit of order, discipline and authority into the new military constitution, which is based upon the equal right and liability to military service of all citizens, she creates a people's army, which not only equals but surpasses in efficiency, interior economy and instruction, the armies of other powers composed of long service soldiers.

Prussia utilises the intelligence and power of all classes in her army.

That first element of efficiency in all armies—the corps of

officers—is taken from the educated classes. The scientific instruction and military efficiency which are required of it give it a true and legitimate influence over the rank and file to whom the officer serves as a model of honour, conscientious performance of duty, and self-sacrifice.

Improvements both in tactics and organisation, the latter amidst party conflicts, go on steadily in Prussia ; and, after the little experiment of 1864, the army conquers that of Austria in seven days to the astonishment of Europe, and in this war, short indeed but on the largest scale, gains all the experience which a hundred battle-fields in Algiers, the Crimea, China, Italy, and Mexico had given to the French. Let us turn to the French army, and first discuss its spirit. Present tactics, particularly of infantry, demand of the common soldier a certain degree of independent action, and, in order to understand the mode of fighting of an army, it is well to know what feelings govern the individual soldier and the troops collectively. After the downfall of Napoleon I., the army again came under command of a Bourbon. Neither Louis XVIII., a well meaning, fat gentleman, who as little as his descendant, the present pretender Comte Chambord, wielded 'la vieille épée de la France,' nor Charles X. were able to inspire the French army with any fresh loyalty to the dynasty, or to blot out the old Napoleonic traditions from the minds of veteran soldiers and officers. The army again changed its colours, and took a fresh oath at the July revolution.

Contrary to the generally received opinion, we are under the impression that under Louis Philippe the army was in a relatively better state. It was under discipline ; it had amongst its leaders some men of reputation ; the princes of the family, D'Aumale and Joinville, had influence.

From national vanity, the incredible folly was at that time committed of reviving the Napoleonic legends in the army.

The Orleans family fell, because their old chief had lost strength and courage to strike down with armed hand the revolutionists of 1848. From that moment, demoralisation

gained ground, the *morale* of the army was weakened in its principal element, discipline. If it did not yet fall into the 'Pronunciamento' system of Spain, it was used as a party tool. After the establishment of the empire the inner sores were only skinned over.

A period of dazzling military glory followed. It must be confessed that the really excellent military qualities of the French in successful warfare again showed themselves prominent.

The skill of the individual in single combat, the impetuous *élan* in the offensive, a certain progress in the manufacture of arms, particularly in the artillery, by the introduction of the first rifled guns, are gleams of light in the successful wars against Russia and Austria. But these pictures appeared in altogether too glowing tints to distant spectators.

The few, only, considered with how many allies France had fought against Turkey, and how at Magenta victory trembled in the balance. The second empire had left the French military system entirely unaltered, and in no way rendered the army more of a national institution. On the contrary, it had been brought into closer resemblance to a mercenary force, by keeping the older substitutes in the ranks, and by giving them bounties for prolonged service.

The sums given to these substitutes came out of a special fund managed by the state. The more educated portion of the French nation did not serve in the army. Yet being filled by conscription, it could still be considered a national force, and represented a considerable part of the strength of the country.

But in those classes which let others fight for them, warlike spirit decayed more and more. The number of young men of the higher classes who chose the profession of arms decreased. The list of candidates for admission to St. Cyr, which in former times amounted generally to 2,000, fell in the last years of the empire to some 600. The corps of officers was not, as

n Prussia, thoroughly imbued with knowledge and instruction. Hence many of its members failed in gaining that influence over the common soldier, which the Prussian and most German officers owe to their own merits and position.

On the other hand, there was in those days a lively feeling of personal honour amongst French officers. They were also full of warlike ardour, for war appeared the best passport to glory and promotion.

The officers who passed out from the school of St. Cyr and from the 'École polytechnique' had as good as made their career, and, if provided with good certificates, were sure of appointments on the general staff. From that time most of them gave up study and the attempt to improve themselves. Very few went through the hard school of regimental duty.

The constitution of the general staff was totally opposed to that of ours, which seeks out the most industrious officers of the whole army after several years' practical service, then trains and examines them, requiring of them afterwards when on the staff the greatest exercise of perseverance and industry.

In spite of all this, it must be confessed that the imperial army was improving up to 1859 in the performance of duty, in military honour, and in discipline. Soon after this, the process of dissolution which was working in French society made itself felt in the army, although the symptoms were only visible to the initiated. We must name amongst these symptoms the inclination for luxury and good living, the deterioration of morals through all kinds of excesses, which resulted in a feeling of utter contempt for all principles of morality. That effeminacy was widespread in the army was proved in 1870 by the articles of baggage and by the sutlers' carts which were captured filled with all the most costly provisions, a sight reminding one involuntarily of the booty taken from the French in former days at Rosbach. Military duties were also greatly neglected in peace time. The officers loafed about immensely. The troops had active and constant occupation only in the standing

camps, and even there the field manœuvres were of a very mechanical character. They were reposing on the laurels of 1855 and 1859. The saying was, 'When we take the field we shall make it all right.' The *élan* of the French soldier is irresistible.

It became a proverb in 1859, 'C'est le général soldat qui a gagné la bataille de Solferino,' which was meant to imply that victory was decided by the soldier and his qualities, not by the talents of the commanders. The relations between the officers, in part risen from the ranks, and the men, had long been far from good. The soldier began to look upon the officer as his oppressor, no longer as his superior. Already in 1859, when French battalions were advancing to the fight, the cry 'Les épaulettes en avant!' had often been heard. The soldier thus took upon himself to remind the officer of his duty. French officers often contributed to such insults by indifference for the well-being of their men, neglect of duty, and deficient instruction; but a good deal was due to the goading of the democratic party and of its press, which introduced, even into the army, the shameless spirit of slander and that of insubordination.

To what extent discipline in the French army had been relaxed is proved by an account, proceeding from a French pen, of the operations of the 7th Corps in 1870. According to the writer, one single infantry regiment lost on the line of march during one hot day, when several miles distant from the enemy, 800 knapsacks and 700 rifles. The soldiers lay in heaps in the ditches, and shouted out insults to the officers who encouraged them to go on.

The army also had become less movable year after year. The arrangements which suited the little war of posts and razzias in Algiers had been introduced from thence into the whole army.

Thus comrades carried the *tente d'abri* in turn, unlike their forefathers of the great revolution, who introduced the practice of bivouacking.

The events of 1866 came like a clap of thunder in the midst of this military confusion. The French felt that the Prussians had surpassed them in military success. The sense of the army was that this must be remedied. The incredible vanity of Frenchmen made them look upon Königgratz almost as a stain upon their history. The soldiers were told that 'les Prussiens,' after conquering the Hanoverians, Hessians, and other German tribes, would attempt to make France share the same fate. The soldier believed in general (and so did a great part of the French people), that a war with Prussia meant one for national independence, a war which would be carried after the fashion of the first Napoleon, into the enemy's country, and which would naturally end with the conquest of the Rhenish provinces.

According to French opinion, the victory over Austria was wholly due to the needle-gun. The idea long before cherished in the French army of the inefficiency of our Landwehr was actively propagated, and all sorts of funny stories were retailed about 'cette espèce de garde nationale.' (In French military writings much surprise was expressed at the victory of 'Prince Frederick Charles' Landwehr' at Sadowa, although there was only one Landwehr regiment in the action.)

As the Frenchman of the present day rarely troubles himself about what passes amongst other people, but believes firmly what some favourite author, or 'grand homme,' has once said, as long as it flatters his national vanity, he knew hardly anything of our reorganisation of 1860, and of the many improvements in our military system.

When the declaration of war took place, the mass of the French army was full of ardour and confidence. They undervalued, as did the Austrians in 1866, their formidable enemy, against whom they went with the cry, 'À Berlin!' Certainly it seems very extraordinary that they should have done so after the experience of 1866, particularly, as men of judgment were obliged to confess that they were beginning to copy the Prussian army in much; but the Frenchman is not logical.

Even the higher officers cannot be acquitted of these faults. And if one heard warning voices like that of Trochu, who published a pamphlet in 1867, therein expressing far from a favourable opinion of the condition of the army, more blame was thrown upon matters of organisation than upon the moral element, which had in many respects degenerated. Faith in the incomparable military qualities of the French soldier existed in all bosoms, and we believe that the Emperor Napoleon shared it, though he did not perhaps so much undervalue the German soldier as did his subjects generally.

One might have passed the following judgment beforehand, at the outbreak of the war, on the military virtues of the French army: impetuous valour, which, combined with liveliness and impatience, urges the soldier on to decide the battle as soon as possible by an attack. Both the old traditions and the later campaigns of the French point to the offensive. The assertion that the French fight badly on the defensive is however inaccurate. They are not steady enough to take full advantage of their firearms; they will never, like the Germans, obtain great results through them; nevertheless their undoubted bravery, their warlike pride, qualify them for making a stout defence. A sense of military honour existed in the French army, but transformed into the idol of individual and national vanity.

The true moral source of that sense was wanting; the spirit which enables a man even in misfortune to preserve his self-respect, and does not allow the love of truth and honour to be extinguished in his heart. We may likewise count amongst the good qualities of the soldier that insatiable thirst for glory and military distinction, so common in the French army. This is a powerful lever to make use of in battle. Lastly, the old ability of the French soldier in shifting for himself in the field, and in strengthening positions, had not deserted him. But discipline, never very good in France, had fallen off; also the confidence of the soldiers in their leaders with few exceptions, their capacity for bearing hardship, and the mobility of the army.

Although the authorities had confidence in the qualities and in the spirit of the soldiers, they yet recognised, after 1866, the necessity for reforms in organisation, in armament, and in tactics. They began to make alterations, but forgot that the material on which they had to work was deficient in many of the qualities necessary for carrying out a thorough reform.

It was not possible, all at once, to create a stern sense of duty, or to inspire the cultivated classes in France with a sudden liking for military service, so as to be able to form an institution like our Landwehr, and, above all, to get officers. The French army was wanting in reserves to make good losses in the first line, and there were besides no troops available for garrisoning posts on the lines of communication, troops which might also serve as reserves to the field army, and be prepared, if necessary, to take the field themselves, like the Prussian Landwehr.

It was only a half reform which they were working at. The imperial government would never have had the power of inducing the nation to adopt an organisation similar to that of North Germany. Substitution was therefore maintained in the regular army, and the 'garde mobile' was created, being intended to take the place of our Landwehr. This institution was very defective, indeed almost a myth, as it could not provide troops in any way fit to take the field until they had served for some months after the battalions were called out. After the death of Marshal Niel this new organisation came to a standstill, owing partly to the want of sufficient military instructors, partly to the unwillingness of the people.

Nevertheless, the preparatory measures which had been taken gave afterwards to the government of national defence the means of setting on foot masses, and of organising them during the pause in field operations caused by the sieges of Paris and of Metz. The greatest reform operated was in the armament of the infantry. The chassepot rifle was issued to the whole army within a space of two years, an arm which is undoubtedly

superior to Dreyse's needle-gun in rapidity of fire, in lowness of trajectory, in length of range, and in handiness.

Artillery *matériel*, as far as guns are concerned, remained what it was in 1859, but the mitrailleuse had been introduced. This weapon was intended to replace case-shot, so defective with a rifle gun, and moreover to be used at long ranges. Great confidence was placed in it and great effects expected. But the construction of these case-shot guns is defective. Their principal fault is a too small radius of dispersion. As for the rest of the *matériel*, it may be said that it neither possesses the advantages of a perfect rifled, nor those of a good smooth bore, system.

At the same time that the infantry were armed with Chassepots, it was attempted to introduce a system of tactics suitable to the new weapon, for it was seen that the time for a mere straightforward rush at the enemy was past. But the French reform was only a half measure in tactics as in other things. They could not adopt the Prussian company-column formation, because their companies were too weak ; but they tried to do something like it in their drill, by dividing the battalion, and by sending companies to the front separately. As a general rule they still retained the battalion as the tactical unit.

The French manœuvres, which had before consisted in little besides the mere drill of large masses, became more like the Prussian field manœuvres, being carried out, if not with two forces opposed to one another, by which method the best representation of actual war with all its vicissitudes is certainly afforded, at least with an enemy well indicated by a skeleton force. But these manœuvres were of little use in forming battalion and company leaders.

The ministerial instructions recognised 'the increased importance of skirmishing in battle ;' in spite of which however, instead of making the most of the natural qualities of the individual soldier, they placed their dependence on the fire of the

masses, on the volleys of deployed battalions or companies. Independent fire was also much used in close order.

The instruction of the individual soldier in rifle shooting was somewhat improved, but not nearly enough even to prepare the way for really effective training in the use of firearms.

The soldier was taught to fire at long ranges, and thus fell into a fault, which is sure at all times and under all circumstances to meet with its punishment. The long range and rapidity of fire were the only qualities of the Chassepot, of which they sought to take advantage. They paid no attention to those elements of a sound system of shooting, steadiness, careful practice, and economy of ammunition.

Lastly, they weakened the offensive element in the soldier, which has always been a Frenchman's best point, by laying down in the official instructions that the defensive furnished the best chances. In connection with this they practised the infantry in the quick construction of rifle pits and slight field-works. Napoleon III. had occupied himself much with the cavalry. New instructions for its employment were given out. The distribution of this arm amongst the infantry divisions was enjoined, which however was not carried out in 1870; also the formation of pretty strong cavalry divisions and reserves. Cavalry was to be brought into action in smaller bodies at first, whilst the cavalry reserves were destined to be used for the finishing stroke. Little was said in these instructions about the movements of the cavalry divisions for acting as a veil to an army, and guarding it against surprise. The troopers were only moderate riders, and they were altogether ill-trained in the management of horses in spite of all the directions given on these subjects. Their instruction in patrol duty was much neglected, except perhaps in the 'Chasseurs d'Afrique' and in a few other light regiments.

Artillery had always been an 'arme d'élite' in France. Its traditions, dating from the time of the first Napoleon, were full of glory. But, not to mention the imperfection of its rifled guns,

its target practice was much neglected. Artillery tactics founded upon the principle of concentration were little practised, owing to the want of great manœuvres.

There were various opinions in the German army respecting the alterations which had taken place in France. At any rate they were very carefully observed. Some critics entirely disapproved the manner in which the French practised their infantry in using firearms at their field exercise, and the instructions issued upon that head.

On the whole we were convinced that the German foot-soldier, even with an inferior arm, would be a match for the Frenchman in action.

The North German army had during the few years since 1866 been fused into a homogeneous body. The Saxon corps retained a certain independence, but was organised like all the rest.

German national feeling had at length gained the victory in all parts of the North German army over small local prejudices, which were fast dying away, and the spirit of the army was completely homogeneous.

In Saxony, and in the lately annexed Prussian provinces, the military organisation was so far not fully established that the requisite number of men was not yet available for completing the Landwehr battalions. The spirit of Prussian discipline and loyalty had at once been infused into the newly formed corps. The hopes of the enemy that these latter would be lukewarm in fighting, and that they would in part desert their colours, were entirely unfounded. The men knew very well that the Frenchman had been the enemy of their forefathers, and what state Germany was in when King Jerome reigned at Cassel.

The whole German army had over that of France the advantage of more recent experience in war. The greater part of the officers and all the older soldiers had taken part in the campaign of 1866; many also in that of 1864. Yet there were in

the ranks a hundred men per company of infantry to whom war was new. In the French army, only the substitutes and a small part of the younger men had been in battle. The older officers could count a good many campaigns, but that of 1859 was the only one instructive in the higher duties of command, for the Crimean campaign was not of an active nature, and the others were of no value in this respect. In South Germany they had commenced after 1866 to organise themselves according to the Prussian system, and to introduce Prussian tactics and regulations. This had been entirely carried out in Baden and Würtemberg, whilst Bavaria had only made an approach thereto. (Although in Würtemberg there were only two battalions per infantry regiment, they had adopted the Prussian drill.)

The Bavarian infantry carried a different breechloader, the converted Podewils rifle and the Werder, the latter an excellent arm.

An attempt was being made to give up a certain loose system of drill and manœuvre which had been in vogue since 1859. The field exercise was conducted with greater steadiness and precision. Great stress had also been laid on the individual instruction of the soldier. Gymnastics were much practised in all the German armies. Since 1866 the German national spirit, which looked for safety in the supremacy of Prussia, had been constantly gaining ground in the South German armies. This had especially made progress amongst the officers, to the great grief of the black and red party, which in this matter stood directly opposed to national aspirations. It is by no means easy, after a war like that of 1866, when the armies of South Germany succumbed to the homogeneous power of Prussia: it is not a small thing, we say, to give up all idea of revenge; to put away the local hatred festered in past times; to acknowledge cheerfully that the strongest power should bear the sway, and to forget and forgive everything for the sake of a common Fatherland.

This discarding of old, paltry recollections, this confidence in the power which but a few years before had been an enemy, is a

sign of true greatness of soul, the finest perhaps ever displayed by the German nation. And this bud of German national feeling bloomed on South German ground, and nowhere more luxuriantly than amongst the officers of the army, in spite of the poisonous atmosphere of sentiments traitorous to the native land by which they were surrounded.

From what we have said about the officers, the spirit of the whole force may be estimated. When Napoleon III. suddenly threw down the gauntlet, when the battle-cry rang through the whole of Germany, there was not a single man in the army, even amongst the rank and file, who had not at least a foreboding that now again, after a long while, he was going to fight for the whole fatherland. In the Prussian army recollections of 1813 were still rife. Most of our popular military songs referred to that period. Even the war of 1866 had not driven it out of memory. The Prussian soldier looked back upon a long succession of wars against the French from the time of Frederick the Great down to 1815. And the old folks of the 'French time,' that is, the time when the French were in Prussia, had often sung him a song about the oppressors of those days. The South German saw in France the power which would restore the old disgrace of the Rhenish confederation and condemn Germany to political impotence. Enough ; the whole German nation down to its lowest ranks was inflamed with ardour for the cause, with confident courage, and with a strong belief in victory, sprung from the feeling that all were united in the resolution, thoroughly to spoil the Frenchman's handiwork for the future.

The military qualities of their fathers were preserved by the German soldiers, contrary to what was the case in France. The German is less affected by the fine speeches which often delight the Frenchman. He does not despise a short simple address of his officer, but above all he is impressed by his actions and conduct. He is sharp to notice that. Indeed the many educated men now in the ranks often detect weaknesses in their superiors, which perhaps had escaped the observation of the

her men. The German soldier has confidence in his officers. e knows that they understand their duty and concern themlves for his welfare. The older soldier learns to prize the verity often necessary to maintain order. He knows further at it is his officer's business to set him an example and to show m the way in battle. Even the Landwehr officer, though the ldier may remark occasionally that he is not well up in the gulations and has not the habit of command, will establish his fluence, if personally fitted to be a soldier; for the soldier illingly obeys a man from the educated classes.

It was therefore wisely ordained that Landwehr and Reserve ficers should be taken from those classes. Besides, Prussia ossessed at the commencement of the war a great number of andwehr officers experienced in the service and in battle. any of these gentlemen had gone through two campaigns, ost of them one, and were quite at home when in front of their en. One of the chief props of this edifice built up of obedience nd confidence, is the Company-chief. On him falls the chief bour of training and instructing the soldier. In constant mmunication with one another the men come to know him oroughly and he learns to know them.

The name by which the Company-chief is commonly known to e Prussian soldier, that of Company-father, explains his position. In battle the Company-chief leads the principal tactical unit, nd is first, and most before the soldier's eyes.

The officers of the Prussian army are, as it were, cast in one ould. This rule extends itself to the men. Already old russia had united the most different German races, but the law liability to military service had created a like feeling of duty nich made all the regiments equally good and valuable. This d not prevent an honourable emulation, which later appeared like measure between north and south Germans.

Let us glance briefly at the tendencies in tactical matters nich had prevailed in the North German army, the strongest rt of the national forces.

It was very evident that we had, amongst many other things to thank the needle-gun, and particularly its rapidity of fire, for a great part of our successes in the campaign of 1866; it was known besides that the Austrians had employed false tactics against this arm, those of the direct assault without proper preparation.

The experience of the Prussians was therefore only one-sided and the question remained, which after 1866 was discussed in numerous works, pamphlets, and lectures: What will be the right system of tactics when breech-loader meets breech-loader? From this question naturally sprang a good many others bearing upon each separate arm, upon the different situations in battle, upon the general conduct of infantry in action, further upon the power of the offensive and defensive in a tactical, and, in connection with that, in a strategical sense, upon the struggle for localities, upon taking advantage of the ground, &c.

The answers to these questions were very different. Some maintained that 'the defensive had now become so strong that true science lay in forcing the adversary to attack. Let him come on, and then one might make full use of victory. If we wished to attack, this should be done by carefully shooting our way on to close quarters, taking every advantage of the ground. The enemy must be dislodged by fire. A direct attack can no longer be possible.'

This conception of tactics would have taken all power from the offensive, indeed, would probably have made it impossible, for how can an army advance if it always has to wait till the enemy attacks? But to give up all thought of taking the offensive was a course which required much consideration. Others held, remembering the great dispersion caused by musketry engagements in 1866, that both the so-called 'fire-discipline' and drill discipline should be made more strict. Volley firing by deployed battalions and companies was pronounced effective and possible.

The formations for attack were much discussed, and many

ought to find a panacea ~~parallel~~ in some one precise formation, such the advance in echelon, without reflecting how seldom one n adhere to any precise formation through all the changing ases of battle, and how often the practice of constantly accus- ming troops to one particular manœuvre has wrought mischief. The opinion was also expressed, that the frequently inde- ndent handling of battalions and companies, in 1866, had pro- ced want of discipline, as the captains leading the companies d often, in their forward rush, got quite beyond control of the perior officers, rendering it no longer possible for them to direct e operations. On the other side it was often urged that this eat independence of action is a characteristic of the present fantry tactics which will never alter. Lastly, others held that direct attack against troops armed with the breechloader was ry possible under certain circumstances, but still that it should avoided if possible, and recommended an attack upon the nk (an old but still telling manœuvre), without making use of tificial formations like the echelon, and such like, but taking ery advantage of the ground.

A still greater importance was promised to skirmishing, already much extended in modern warfare; and by this, it was main- ined, battles would be decided.

Hence it was deduced that, in peace time, every attention ould be paid to making swarms of men in extended order anageable. Again, the more terrible became the effect of fantry fire, the more did it become necessary and useful to udy the art of taking advantage of ground. Field manœuvres, th the force divided into two parts, would be the best means imparting this knowledge, after suitable preliminary skirmish- g drill in the field. The so-called 'field exercise,' calculated keep battalions and companies as much as possible under ntrol of the commander, was condemned as something un- tural.

The fire of troops in close order, it was urged, should very rely be employed, and then in the form of independent firing,

not of volleys. The practice of quickly throwing up rifle pits f the protection of infantry, recommended by those who supporte the other side of the question, was pronounced to be only sui able, in actual warfare, to a strict defensive ; and it was state that on the offensive, or in the preparatory musketry conflic such works would only impede the progress of the attack, ar moreover would be impracticable under fire.

Opinions were also divided as to the manner of using musketr Some wished to open fire at the longest ranges, thus adoptir the French principle, whilst others replied that the only way securing success was to fire coolly at short distances. All instru tion and practice should, according to the latter, be devoted the well-directed fire of the masses at close quarters.

The point of attack should, it was held, be reconnoitred wit great care, because it was very difficult to change the directic of the movement if once a wrong line were taken ; all the mo because, during a musketry engagement, a certain dispersion the troops necessarily arises, particularly in broken ground. Tl propriety was moreover pointed out of teaching the men that, they give way when within the effective range of breechloade the consequences must infallibly be disastrous.

The well-tried Prussian company column was pronounced be in almost all positions the best fighting formation, and, und certain circumstances, half battalion columns were recommende The double column of half companies, in the general opinion the army, had long ceased to be suited to battle, at least as colun of attack, as it had been called since 1813.

We pass over other proposals, such as partial extension the ranks, or lines firing as they advance in half extended ord There was but little difference of opinion as to the conduct to pursued on the defensive, and the only disagreement of impc tance was as to the proper mode of delivering fire.

There was less difference of opinion as to the part to be play by cavalry and artillery in action than as to the employment infantry. All were pretty nearly unanimous in maintaining th

e attack of large bodies of cavalry could only be possible under eculiarly favourable circumstances, in actual battle, and that e really important duties of cavalry consisted in spreading out r and wide for the purpose of gaining intelligence of the enemy, nd of covering and concealing the movements of your own rmy. Opinions were more divided as to the proper formation nd number of cavalry in the field. Some believed in the possi- lity and utility of great flank movements and expeditions in ar of the enemy. Others, holding that cavalry corps—such as ose formed in 1866—were too unwieldy and too little able to ift for themselves without the aid of infantry, did not share ese hopes.

The artillery has been very generally attacked since 1866. he manner in which it was employed, and also its tactics, were amed, often with justice. The practice of opening fire at from 000 to 4,000 paces in many battles was also an object of iticism, and the opinion had gained ground that ranges of 500, or at the most 3,000 paces, were really the most effective, he fear of losing pieces, which had shown itself occasionally to ur detriment in 1866, had disappeared. One remarked, at all anœuvres, that the artillery was busying itself in correcting the ults discovered in the last campaign. We will say no more pon this subject till we describe the untiring activity of the rm on service. Neither particular changes nor the development new ideas were to be remarked in the pioneer service, the mployment of which, in 1866, however, left much to be desired many respects. The pioneers were now and then rather more ed at field manœuvres. The campaign of 1866 had afforded o small a sphere of action for this arm to furnish any particular ducement for reform.[1]

[1] The pioneers form sixteen battalions, one of which belongs to each army corps. On e war footing each battalion furnishes three companies for field service, the fourth mpany being left behind to form a nucleus for a garrison pioneer battalion. The rvice companies are one of pontoniers, one of sappers, one of miners, each being the strength of 200 non-commissioned officers and privates, under five officers who long to the corps of engineers.—TRANSLATOR.

Having thus given a sketch of the different views held in the army upon tactics, we turn to the official instructions and to the training-places.

These instructions dwelt upon the power imparted to the defence by the breechloader. They asserted that a good steady infantry was hardly assailable from the front, unless at the same time attacked in flank. But yet the offensive was brought into the foreground, and the principal task of tactics was represented to be that of carrying out the infantry attack successfully; if not in the first rush, yet by perseverance, a clever use of the ground and of the situation. It was recommended, then, as a general rule, to direct your movement on the enemy's flanks, or, if that were not possible, at least to threaten them. The battle should, it was said, be opened by dense clouds of skirmishers, who advancing at a run, should get as near the enemy as possible before they opened fire. A concentrated and prolonged artillery fire should prepare the way. The usual formation of infantry should be that of company columns, or, in peculiar cases, of half battalions. Supports were directed to place themselves at a suitable distance behind the line of skirmishers. Then, little by little, the latter would push forward firing, close up to the enemy, when after a hot fusillade, the second line combined with the first, or the first line alone, according to circumstances, would be led forward to the assault. Much value was also attached to the advance of the company columns into the line of skirmishers and to their volleys. The principle was impressed upon cavalry of attacking shattered infantry at the right moment with the speed of lightning. It should only act by small detachments, or at the most by brigades, in regular battles. Doubtless the mode of attack suited to present circumstances was here laid down aright, as far as this could be done.

A judicious choice of defensive positions, calculated to allow sufficient play for rifled fire-arms, was wisely dwelt upon. Heights with easy slopes and with good flank-appui, were indicated as the most favourable. Infantry should still throw out clouds of

skirmishers with their supports, as the first line, with half battalions in rear. Particular importance was also attached to volleys, when on the defensive, and their delivery in four ranks had been much practised. We may mention, as a great benefit to the Prussian infantry, that shooting at short ranges was specially enjoined in the official instructions.

Since 1866 we had made great improvements in the formation of the 'ordre de bataille.' The greatest simplicity was substituted for the combination of detachments from different corps in advance guards, hitherto the rule.

The expediency of avoiding sharp advance-guard engagements before the main body could come into line was repeatedly referred to. Lastly, the proper position for the main body of the artillery of an army corps, namely close behind the advance guard, was pointed out. The change of title from 'reserve' artillery to 'corps' artillery was here applicable.

The tactical principles advocated in these instructions were, as a whole, practically worked out in the field manœuvres of the army. But at the same time the drill regulations of 1847 remained still in force, and thus the field exercise was not always conducted on the drill-ground in accordance with these principles. The Prussians still practised on the exercise-ground the advance of battalions in line with the delivery of battalion volleys, and the attack in double columns of half companies, things which are hardly compatible with the nature of warfare in these days. Also when the battalion was drilled in company columns, volleys were fired by preference. An inconsistency becomes here apparent. On the drill-ground we still remark formations which sprang from the battles of 1813, but on the field of manœuvre we notice the development of ideas generated by the experience of the last twenty years.

Shortly before the war of 1870, new drill regulations for the infantry—those now in force—were to appear. These regulations were calculated to do away with many of the inconsistencies which we have noticed. On the outbreak of the war it was

thought better to postpone the issue, which must be considered judicious, though it would have been a very easy thing to learn the new rules. Even in 1866 that portion only of the field exercise was made use of which appeared applicable to existing circumstances, and as the drill regulations are of a very pliable character, this could easily be done. The old attention had been paid to shooting. The results improved from year to year, which is clearly proved by the practice registers of the different periods.

Such was, briefly, the condition of the North German army. Those of South Germany differed from it only in a few points with regard to tactics; and if Prussian formations had not been adopted by the Bavarians, still the spirit of Prussian tactics had been impressed upon them. Würtemberg, Baden and Hesse, followed the Prussian regulations, so that the North and South German armies may on the whole be considered as one.

II.

DISTRIBUTION OF THE ARMIES AND STRATEGICAL OPERATIONS IN THE WAR OF 1870–71.—*MILITARY INSTITUTIONS AND LEVIES.*

THE whole German force was divided, at the very commencement of the war, into armies with separate commanders-in-chief. The French, following the old Napoleonic traditions, only into corps. The division into armies, unless one is obliged to operate on different theatres of war, is condemned by many as a mere multiplication of authority; and these critics assert that with a supreme commander-in-chief intermediate army commanders are entirely superfluous. But the experience of 1813 and 1814 is against this; it is impossible to keep large armies sufficiently concentrated for orders to be received at the right moment by the corps direct from the grand head-quarters. In 1866 also the distribution into armies had been proved good.

It must, however, be confessed that these army commands may be useless in the tactical crisis, but this does not do away with their other advantages.

The system pursued by us in 1866 and 1870 is founded upon the division of the whole host into armies, each of which has strength enough to oppose a vigorous resistance if attacked, until succour can arrive. With this subdivision of the force, the broadest possible strategical front is advisable. The troops can thus be more easily subsisted and move more freely, having more roads at their disposal. A rapid concentration must evidently take place before decisive tactical operations; to order

and accomplish which, at the right moment, is the special province of the commander-in-chief.

The year 1866 witnessed an operation of this sort successfully conducted. 'It was quite clear,' to quote the work of the Prussian general staff, 'that the enemy might direct his whole force upon one of the separate armies;' but, as was afterwards pointed out, the geographical character of the seat of war, and the great numerical strength of the host, rendered this separation necessary for purposes of supply, whilst the concentration of the armies would take no more time than would the operation of bringing them into line from the rear, if they were kept together. It may, then, be fairly asserted that the saying 'March separate, fight united,' never met with a more extended application than in the wars of 1866 and 1870.

The German army corps consists of two divisions of infantry, one battalion of Jäger, one of pioneers. One regiment of light cavalry was attached to each infantry division—an excellent arrangement, which provides admirably for reconnoitring duties, and secures the division from a surprise such as befell Douay's division at Weissenburg; always supposing you know how to use cavalry.

The artillery furnished twenty-four guns to each infantry division. The rest was united as the corps artillery. The chief mass of cavalry was formed into independent divisions, to which two or three batteries were attached. These divisions were entirely independent of the corps commanders, and received their orders direct from the army commanders.

French army corps were not all of the same strength. They consisted of three or four infantry divisions to which no cavalry was attached, with an independent division, or sometimes only a brigade, of cavalry. There were, besides, three reserve divisions of cavalry. Each infantry division had from twelve to fifteen guns. The remaining artillery of an army corps formed rather a weak corps reserve, besides which an army-artillery reserve was formed, after the fashion of the Austrians in 1866. The differ-

ences between the two systems in the distribution and in the arrangements for the command of cavalry and artillery are very striking. Equally so was the tactical employment of these arms.

A French infantry division contained thirteen battalions, including one of 'Chasseurs,' about 650 men per battalion; and thus was, at the beginning of the campaign, from 8,000 to 10,000 strong. The eight army corps which France brought into the field in first line represented a force of about 270,000 fighting men. The army corps afterwards organized by Gambetta and by the government of national defence were, in the main, composed as were those of the imperial army; but the cavalry, being an arm difficult to create, was in much smaller proportions, and a cavalry division could only be formed with the Loire army.

Germany sent at first into the field eleven army corps and eight cavalry divisions, amounting altogether to about 440,000 men, who after August 10 were augmented by three additional corps to the strength of 500,000 men; whilst up to September 1 the French only succeeded in adding to their field army 80,000 men, many of whom went to make up fourth battalions, composed partly of young recruits, partly of old reserve men.

Such were, in a few words, the forces opposed to one another up to the capitulation of Sedan. Besides these field armies, at least 20,000 troops of the line and four divisions of mobilized Landwehr had been left behind to guard the coast and occupy the fortresses. We leave unnoticed in this place the great superiority of Germany in garrison troops and in organized reserves.

The strategical object of the French was a quick offensive movement, which at any rate was quite in keeping with their traditions; and we know now, with tolerable certainty, that the Emperor Napoleon intended, after assembling his forces at Metz and Strassburg, to cross the Rhine at Germersheim with some 250,000 men, and thus to interpose himself between the armies of

North and South Germany. 50,000 men, under Canrobert, as a reserve, were at first to move on Metz.

But the mobilization of the French army took place more slowly than did that of Germany.

When the fallen government in France was reproached with having had nothing ready, and when it was said that the minister Le Bœuf had knowingly uttered a lie in stating that the army was prepared, these assertions may fairly be disputed as far as they concern the immediate field army. Equipments, ammunition and transport, were in existence, but stowed away in a few great depôts, and not given to the troops in peace time. The army intended to take the field in first line, had also reserves enough to fill the cadres, but the machinery for mobilization worked stiffly, and the preliminary dispositions were defective. The intendance also, the organization of which had before this been considered very practical, showed itself unequal to its task.[1]

The French army, posted on the German frontier in the quadrilateral Metz, Thionville, Weissenburg, Strassburg, with the 7th Army Corps between Colmar and Belfort, was not complete in all its parts at the end of July, nor was it fully provided with transport, ambulances, &c.; but this was not only the fault of those in authority, but also of the whole French system, which was incapable of keeping pace with that of Germany. That this system was still in existence was not only the fault of the government, but also of the conceit and presumption of the whole nation. Meanwhile, in spite of the unreadiness of the army, an offensive movement which would make the French for a time masters of the left bank of the Rhine, and would seriously impede the German army in its march up to the front, was by no means impossible.

Assuming that the French commanders were acquainted with the rapidity of German mobilization, this could only be a reason

[1] General Trochu, however, pointed out its great defects in his well-known pamphlet published in 1867.—TRANSLATOR.

the more for making a speedy forward movement. But supposing the French commanders to have been energetic, what could they, with unready troops, have undertaken with any prospect of success? They might in the first place advance with all their assembled forces. But the Rhine would necessarily bring this movement to a stand still. The German army would at all events have already collected in sufficient force to dispute the passage of the river, supported by the Rhine fortresses, and probably, considering the unprepared state of the French, with success. But even had the latter forced the passage, they could not have carried on offensive operations in the enemy's country for any length of time with an army, like theirs, incomplete. They must then have completed their mobilization on the left bank of the Rhine within German territory. With good arrangements this would not have been impossible. In 1859 they had in like manner been obliged to open the campaign with an army not mobilized. But in the case in question the mobilization would have been accomplished with greater difficulty and delay, which would have enabled the Germans to concentrate their armies behind the Rhine, after which, with the fortresses as their base, they might have crossed the river and assumed the offensive. The French army, with its mobilization arrested by its own forward movement, would doubtless have been, under those circumstances, less ready than it actually was at the beginning of August.

Napoleon therefore cannot fairly be reproached for having given up all thought of any immediate offensive movement on a large scale, under the existing circumstances. (Would this have been possible to a man of extraordinary genius like his uncle? At all events Napoleon I. would have been better informed as to the organization of his army, and would not have declared war without being ready to fight.) But other measures were very feasible. One or two infantry divisions from the corps of Frossard formed before the war at Châlons, with two cavalry divisions, might have fallen at once upon the Rhenish provinces,

driving back the weak Prussian outposts and blockading Saarlouis, after which they might have entrenched a position somewhere about Kreuznach, pushing forward detachments as far as the Rhine, destroying the railways, thereby much impeding and delaying the advance of the German armies to the left bank of the river. By these means the impatient disposition of the French would have been calmed, the self-confidence of the army would have been maintained during the first period of the war, and it would at least, by the beginning of August, have been in better condition, whether for defensive or offensive operations.

The omission of Napoleon to push forward some divisions was the commencement of that dead defensive which on the whole, with the exception of the 'coup manqué' on Sedan, characterized French *strategy* in the first part of the war, and from which a *tactical* defensive chiefly arose.

The position taken up by the German army, after the French had given up the offensive feared by many, was more concentrated in proportion than in 1866, and completely refuted certain *unanswerable* authors who had based their arguments on the division of the German forces.

The strategical front of the German host at the beginning of August was from fifteen to sixteen miles in extent.[1] The nature of the theatre of war did not render so wide an extension of the armies necessary as in 1866; hence as soon as the 3rd Army had passed the Vosges, they could easily afford one another support. A concentrated strategical attack was not feasible; but the left wing, the 3rd Army, was pushed forward to assail the French right wing. We observe here the idea of a strategical turning movement developed at the very outset of the campaign. As the latter progressed, the strategical flank movement was often converted into a tactical one, as at Gravelotte and Sedan.

You will seldom find the energy of command—the fixed deter-

[1] From 41¼ to 44 English miles. Throughout the work we must understand the mile to be about equal to 4¾ English miles.—TRANSLATOR.

mination to get at the foe as soon as possible, to force him to battle, and to destroy him, united in such a high degree with foresight as in the proceedings of the German commanders after the battles of Spicheren and Wörth.

Whilst the left wing, 3rd Army, pursues MacMahon, and thus closes upon the centre, the latter, composed of the First and Second armies hand in hand, concentrates and moves cautiously forward, so as at the same time to be prepared for an offensive return of the French, and also to deliver with united strength the projected blow, intended to strike the enemy's main army near Metz, and if possible to drive it into that fortress. This astonishing performance, which was accomplished by the bloody battles of August 14, 16, and 18, has, not to mention Sedan, no parallel in modern history, except Prague in 1757 and Ulm in 1805. In both these cases the hostile army was driven into and shut up in a fortress. But only in the last-named instance did the affair end with a capitulation ; and even at Ulm the Austrian cavalry was able to cut its way through. Only an extraordinary military genius is capable of such enterprises. An ordinary general would have been satisfied with the retreat of Bazaine's army from Metz to Châlons. Doubtless the plans of King William and Marshal Moltke were founded upon the numerical superiority of the German host. This superiority was generally adduced by the French in the first period of the war as an explanation of our victory which served to console them, to which most authors belonging to another army willingly contributed by exaggerating our strength and by underestimating that of our opponents. But not to mention that our tactical advantages, even over the old French army, were often gained by inferior numbers—as for instance at Mars-la-Tour,[1]—one must reflect upon the wonderful

[1] One need not be surprised, considering the state of affairs then prevalent in France, that the French understated the strength of their armies Thus, particularly, MacMahon's army at Wörth was estimated by some at 35,000, by others at only 20,000 men. MacMahon's corps consisted of four divisions each of thirteen battalions. The division, therefore, came to about 9,000 men. Besides this, he had one division of the seventh corps, one of cavalry and one cavalry brigade. All the African

result of the war up to the end of October in order to do justice to the ability of the German leaders, and to the excellence of the German troops. When has a mere superiority of numbers worked such prodigies? Two veteran armies amounting to 300,000 men captured ;—at any rate our superiority was made the most of. Besides, as we shall further have occasion to point out, the power of the defence undoubtedly gained strength through the assistance of a fire-arm surpassing ours.

After Bazaine's army was shut up in Metz, followed the advance of the two Crown Princes' armies on Paris.

Napoleon's flank march with MacMahon's army of nearly 150,000 men was, in its consequences, a great piece of luck for the Germans. Suppose Napoleon had, as was proposed to him, led this army back to Paris together with Vinoy's corps, which actually did return, forming thus a body of 170,000 regulars, the investment of the capital would have been at that time possibly, nay probably, an undertaking exceeding our power. Let it not be urged that at that very time we were enclosing 150,000 men in

regiments were there, and they are always on a war footing ; the line reserves had also joined. MacMahon's infantry alone, if we allow a loss of 2,000 men at Weissenburg, must be put at 42,000 men, so that with cavalry and artillery he had from 45,000 to 48,000 men.

The Germans brought 90,000 men into action ; our force was thus double that of the enemy, not fourfold, as the French are fond of stating. If all the German troops within a circumference of three miles were reckoned, as they often are by the French, the division of General de Failly's corps, which actually was engaged at Niederbronn, must likewise be added to their numbers. The well-known speech of Trochu in the chambers throws further light upon the fantasies of the French and upon their capacity for making the least of their strength when defeated. According to Trochu, there were only three complete line regiments in Paris when first invested,[1] whilst he states elsewhere that Ducrot fought with 50,000 regulars at Châtillon on September 19, &c. &c.

An Austrian author reckons 60,000 Germans against 25,000 French at Spicheren—and only puts the strength of Bazaine's army at Gravelotte at 90,000 men ! !—statements for which we reserve a complete refutation in another place.

[1] Perhaps Trochu's statement may after all be accurate, or nearly so. The only complete line regiments in Paris, when first invested, were two of infantry and two of cavalry belonging to Vinoy's corps. The remainder of the 60,000 or 70,000 so-called regulars in the city consisted of recruits, and old depôt men hastily formed into provisional regiments ('regiments de marche'). The two infantry regiments had just returned from Rome.—TRANSLATOR.

Metz, since the situation at Paris was different simply because the ine of investment at the latter place was of double extent to that f Metz, and thus was much weaker in proportion. Napoleon nade his flank march. Just as, under similar circumstances, in 814, the allies did right in not following Napoleon I., so were he German leaders justified in August 1870 in hastening at nce after Napoleon III. His resolve to make the attempt, vith 150,000 men, to march by the King's army and to relieve Metz, is in our opinion not deficient of a certain greatness.[1] He vas certainly playing a risky game. The materials for success vere wanting in all ranks. Neither did the corps and division ommanders possess in general the ability to lend effectual ssistance to such a foolhardy move, nor had Napoleon the ecessary genius or power of will to urge them on.

The subalterns had not sufficient authority over the men, and he latter were neither well-disciplined enough, nor sufficiently ood marchers, to be able to make the forced marches necessary o the success of the undertaking, without much straggling. All hese chances of the game were in favour of our side, and thus he Germans succeeded once more in surrounding the enemy, his time with an immediately fortunate result, so vast, and nder such circumstances, as to be unparalleled in history.

Eighty-five thousand men, the remains of MacMahon's army, vere forced to lay down their arms ; and this gigantic success vas obtained with comparatively little loss, except in the case f some few corps. (The 6th Regiment had all its field officers nd captains killed or wounded. The 1st Bavarian and 11th Prussian Army Corps also suffered severely at Sedan.)

The grand army (Guards, 4th, 5th, 6th, 11th, 12th, and the wo Bavarian Army Corps, with the Würtembergers and four avalry divisions) again took the direction of Paris. The Seine

[1] We fear that even this praise must be refused to Napoleon III., as by his own nowing he disapproved of the movement which was made in obedience to orders om Paris. His military judgment being in this case good, all the more pitiable oes his conduct appear.—TRANSLATOR.

was crossed by the 3rd Army, and the demoralized troops of Ducrot and Vinoy (those of the latter, however, not having yet been under fire), were driven from the heights of Châtillon and Sceaux into Paris by greatly inferior numbers; their opponents being the 9th Division and 1st Bavarian Army Corps. On the evening of September 19 this great capital, with its 2,000,000 inhabitants and 400,000 armed men, was invested by an army of less than 200,000 men. (According to Major Blume 122,661 infantry, 24,325 cavalry, 662 guns.—*Translator.*) What finer triumph was ever known of discipline and military science over numbers!

The war reduces itself for some time to three sieges: Paris, Metz, Strassburg. The last named fortress fell after a siege of eight weeks, and we were able to make use of the troops of Werder together with the mobilized Landwehr, who had been brought forward for the subjection of Alsace, the blockade of Belfort, and for the occupation of a part of Burgundy and of the Côte d'Or. Meanwhile Paris and Metz do their duty as fortresses; that is, they occupy ~~40,000~~ 400,000 of our men, and give the government of national defence time to organize fresh forces, which is done energetically and zealously under the direction of Gambetta. At the same time they try to stir up a guerilla war (Franctireurs), and to promote outbreaks in rear of the German armies. In Paris, which holds out well, Trochu organizes a field army, which, by using the old cadres, attains by the end of November the strength of from 160,000 to 180,000 men between regulars and garde mobile. The arming of Paris is completed; sorties are made up to the end of November, partly for particular minor objects, partly to accustom the troops to fire, and to annoy the Germans.

The newly formed Loire Army, under D'Aurelle de Paladines, meanwhile moves forward towards Paris. Von der Tann is sent to encounter him with his corps and General Wittich's division. At the same time those fights commence, connected with the sorties from Paris, which continually prove that well-organized,

experienced, and disciplined inferior numbers, are more than a match for inexperienced, untrained, and undisciplined masses.

Orléans is occupied, affording a point of appui against west and south. Organization is progressing on all sides in France. Masses of men are called out; by masses they expect to conquer. All efforts are to be directed to the relief of Paris, which is intended to assist the movement by a sortie on the largest scale. Already one may distinguish four separate theatres of war, on each of which a new French army is being formed—namely in the south-west, in the north, in the south-east, and in the south. 1. The Loire Army, resting on the districts on both sides of the river. 2. A west army at Le Mans. 3. A north army, having for its base the north-eastern fortresses, such as Lille, &c. 4. A south army, with Besançon and Lyon as points of appui and depôts. Garibaldi fights in the last army, having through a wonderful illusion been induced to draw his sword for France, instead of falling on Nice and retaking his native place from the French. Metz falls, reduced by famine, after the old French army had only made one real attempt to free itself: the battle of Noisseville on August 30 and September 1. The other sorties cannot count as great undertakings, though they led to partial engagements. The army of Prince Frederick Charles is disposable, and it was time that it should be. Troops are required in the north and the south-west to cover the army investing Paris. The 1st Army under General Manteuffel (1st and 8th Corps) is ordered to occupy as much country as possible in the northern departments, and to beat the armies which are there being formed for the relief of Paris.

The 7th Corps remains for the present at Metz as a strategical reserve. The 2nd Corps is forwarded to Paris as a general reserve for the thin line of investment. Reinforcements were most required in the south-west. Here, D'Aurelle de Paladines had forced Von der Tann to evacuate Orléans. The advance of the French principally threatened the Bavarian right flank. Von der Tann

met this move by marching off by his right from Orléans, and succeeded, after withstanding D'Aurelle de Paladine's attack at Coulmiers with 25,000 men against 70,000, in joining the 22nd Division at Artenay. This operation of Von der Tann was the result of a wise calculation of the enemy's intentions. He avoided a possible defeat, and saved the honour of our arms. Movements which Paladines now made with his left wing, supported by the troops brought up from Le Mans, drew the 22nd Division away northwards to drive the enemy from the inconvenient neighbourhood of Versailles. The French outposts were at that time hardly six or seven miles from Versailles. The French operations could only produce important results if Paladines had meantime been able to take the offensive vigorously against Von der Tann, who had remained at Toury. Instead of this, Paladines was first of all obliged to reorganize his army. The French Loire Army had by November 20 attained the respectable numbers of 200,000 men, but already Prince Frederick Charles was coming up with his army composed of the 3rd, 9th, and 10th Army Corps. The army detachment of the Grand Duke was placed also under command of the Prince. The 17th and 22nd Divisions still remained pointing westwards. They had to change front to the left so as to join the 1st Bavarian Army Corps, whilst the 9th, 10th, and 3rd Corps were on their advance somewhere between Montargis and Pithiviers. The French army, divided into six corps, stood in a long line, which is pretty well indicated by the points Sully, Orléans, Meung.

The stroke which Paladines delivered towards the end of November with two corps in the direction of Beaune-la-Rolande was apparently calculated to induce a concentration of the German troops on their left wing, so as to free the road between Orléans and Paris. This attack was repulsed on November 28 by the 10th Army Corps and the 5th Division. On December 1 the German troops were in a semicircle, ready for a concentric advance on Orléans, between the country north of Bellegarde

on the Orléans canal, and Orgères on the road Châteaudun—Etampes. According to a published document, Paladines appears to have intended to attack the enemy in earnest with his centre, so as to necessitate his concentration; then to retire on Orléans, drawing the enemy's main force after him, and thus giving his own wings the opportunity of advancing on Paris.

This plan seems so complicated that one can hardly believe a general like Paladines, who so well understood the inferiority of his troops, to have entertained it. A retreat of his centre, and the evacuation of Orléans, would have been very serious events, without mentioning the other inconveniences which such a movement would entail, such as the separation of the wings and division of strength. The concentric advance of the armies of the Grand Duke and of the Prince encountered, at any rate, a forward movement of Paladines, which the latter had undertaken with the simple object of breaking through the German centre. According to the determination of a council of war, the French were to direct their march on Pithiviers, and their Corps were to advance from the left in the following order; 17, 16, 15, 18, 20. The French in their forward movement came upon the right wing of the Grand Duke's troops. A Bavarian division was compelled at first to retire to Orgères, after which, however, the Grand Duke and the Prince Field-marshal drove back the advancing French to Orléans, in the battles from December 2, to December 4. In consequence of this, the whole widely extended position of the enemy was cut in two, three of his corps retiring in the direction of Bourges, three others under Chanzy to the line Marchenoir—Beaugency, from which they were forced back on Vendôme after some hard fighting on December 8 and December 10. The German 9th Army Corps being sent across the Loire, marched along its left bank, moving on Blois.

The concentric attack on Orléans was, like the strategical concentric advance into Bohemia in 1866, accomplished by constant fighting, and, on the evening of December 4, 100,000 Germans stood on a short front of two miles around Orléans.

Paladines would have done better to concentrate his army, notwithstanding its poor composition, upon one wing, about the end of November, and then to take his chance. It is true, that the bad marching powers, inferior discipline, and equipment of his troops must have in a much greater degree interfered with his plans and operations than was the case with MacMahon when he made his desperate attempt.

After the battle of December 2, Paladines had no better course to follow than to make an orderly retreat and to give up Orléans. The interference of Gambetta, who thought it was possible to overcome all difficulties, gifted as he was with energy and a strong imagination, disturbed Paladines and produced useless battles near Orléans, thus damaging the situation of the French. Whilst these events were taking place, the Parisian army, having become fit for the field, made with 140,000 men a vigorous attempt to break the blockade, and to advance towards the army of the Loire. 50,000 or 60,000 Germans finally defeated this attempt between Seine and Marne and after two bloody battles, on November 30 and December 2, the French again retired behind their forts.

Scarcity arising in Paris, speedy relief became necessary. But on the north side also, this failed in reaching the capital. The North Army formed first under Bourbaki, later under Faidherbe, and consisting of from 50,000 to 60,000 men, had as its base the numerous fortresses in the north-east. It was beaten by General Manteuffel with only three divisions near Amiens on November 27. Amiens and Rouen were occupied, whilst an expedition was made against the port of Dieppe. The French North Army retreated upon its base in the north-east, whence after seven weeks it again advanced, to meet with another defeat on the Hallu on December 24. Faidherbe then led it behind the north-eastern fortresses to reorganize his 'Garde Mobile,' and mobilized peasants.

The way in which German generalship has been criticized during this portion of the campaign is well known. This

riticism comes in fact partly from a source which one is justified n qualifying as strongly imbued with party feeling, therefore uspicious. But the then commander of the 1st Army has also een reproached by the other side with having made too little se of his victory at Amiens, with having pursued too little, and rittered away his forces in minor operations ('Thoughts and Observations on the War 1870–71,' a work attributed to a Prussian general). One cannot as yet form a positive judgment pon these events. We must not forget that General Manteuffel's ask was a very difficult one; less indeed on account of the trength or quality of the armies opposed to him, than of the xtent of country which he was required to occupy and observe.

His chief task was to cover the siege of Paris on the north ide. Whether with the forces at his disposal he should have ursued the enemy to the north-east after the battles at Amiens nd on the Hallu? or whether, had he done so, he would not ave laid bare the northern side of the line of investment? are questions which are as yet difficult to decide. If really there vas a considerable force of the enemy at Rouen towards the nd of November (some Prussian authorities assert that General Briant was there with 50,000 men), then it was incumbent on Manteuffel to lead his main body on Rouen. It seems, indeed, hat the force there was not so large as supposed, for the town vas occupied after a slight engagement. Neither did afterwards ny more considerable force appear in the neighbourhood rom the north. At least what did appear was easily beaten ome weeks later by General Bentheim. At all events it was ecessary to occupy Rouen, as from thence an advance along he Seine Valley against the army besieging Paris might have een feasible. It was also of consequence to obtain possession of o large and rich a town. The only question is, what force was vailable for the purpose after November 27? As during war ne can evidently never be as wise as many authors are afterwards, t is very possible that General Manteuffel acted quite right, onsidering the reports which he received of the enemy's strength,

in directing his main body on Rouen. Assuming that after November 27 a more active pursuit might have been undertaken towards Lille, it could never be General Manteuffel's task to follow the defeated French far to the north-east with the main body of his army as some have maintained. His army would thereby have been detained for a long time in front of the fortresses, whereas it was required to remain constantly available to oppose any attempt at relieving Paris from the north.

Any pursuit must have come to an end, as indeed the author of 'Thoughts and Observations' admits, about Arras.

That information had been received in Paris by the middle of December of Faidherbe's advance, is proved by the sortie rather tamely executed against the Guard and 12th Army Corps on the 21st.

During the months of September, October, November, and December, the blockades and sieges of the fortresses, constructed almost entirely on the old system, were carried on uninterruptedly, chiefly by Landwehr troops. Most of them fell after a few days' bombardment, in which our siege artillery demonstrated that fortresses are hardly now-a-days deserving of the name, unless provided with detached forts. Thus it went on to the end of December. On the 27th the Germans commenced their active attack on Paris. The cannonade of Mont Avron put us in possession of that point within forty-eight hours. On January 5, the cannonade of the south front and the bombardment of Paris commenced.

Again, the French relieving Armies have been rested, reorganized, and strengthened enormously.

Chanzy's army, which, as soon as it was known that Prince Frederick Charles was not marching after Bourbaki, had retired from the line of the Loir upon Le Mans, after a sharp fight at Vendôme on December 16, again counts 130,000 men. Faidherbe has collected 60,000. Bourbaki's movement towards the east had commenced with the intention of falling on Werder's army, of defeating it, of relieving Belfort, of disturbing the com-

munication with Germany, and, if possible, of breaking into South Germany. Chanzy commences his march on Paris at the beginning of January, directing his columns on Vendôme. But Prince Frederick Charles also puts his army, consisting of the 3rd, 9th, 10th, and 13th Corps, with three cavalry divisions in movement, and pushes Chanzy back on Le Mans, from January 6 to 12, without intermission. On the last-named day, Le Mans itself falls before the concentric attack of the Prince's forces. Chanzy's army is totally dispersed.

This advance through the classic land of civil war (in 1794 the Republicans gave the last blow to the Vendeans, near Le Mans) was accomplished by a continuous series of actions in a country very much like Holstein, but still more cut up by fences and quickset hedges, in many parts very hilly, and dotted with farms and woodlands. Our soldiers showed themselves always superior to their adversaries in the many detached combats into which the battles resolved themselves in this broken, enclosed country, which proves that even in such ground only partial advantages can be gained by large rabbles of men, or by partisans and guerillas. The less well-trained army will, now that all troops are taught to fight in extended order, always be defeated, in the more important combats, by the better-trained army in a country of this kind.

Meanwhile, Bourbaki, with four Corps of the same quality as Chanzy's troops, had so far pursued his operations, that starting from Besançon he had advanced on Werder's position, which extended for about thirty miles from the line Montbéliard-Vesoul to the neighbourhood of Langres. Werder had, after making a point as far as Nuits, on December 18, with two Baden brigades, and after beating there the Lyon troops under Cremer, evacuated Dijon on hearing of the concentration of Bourbaki's four corps, and retired on Vesoul. Dijon was occupied by Garibaldi, who, advancing on Bourbaki's left, was to operate on the communications of our main armies with Germany. Werder, at first left to himself, determines to cover

Belfort by a prepared position, which extended six miles, from Delle by Montbéliard and Héricourt, to the neighbourhood of Frahiers. The execution of his march from Vesoul to the Lisaine, along the front of Bourbaki's army will always be considered a strategical masterpiece. The time is wanting both to make an unmolested retreat to Montbéliard, and to establish himself there firmly. Rightly speculating upon the composition of Bourbaki's army, he gains time for himself by the point which he makes against the enemy's advance-guard at Villersexel. He gains his object; Bourbaki concentrates considerable forces in that direction, and requires after the combat, not in itself of much consequence, two days' rest before he can continue his march. Meanwhile, Werder retires to his entrenched position and beats off all Bourbaki's attacks from January 13 to 17. He fought with 45,000 against 130,000 men, but these last were famished, undisciplined, and worn out, and did not fight with the old energy. In the meantime a new Army had been formed out of the 7th Army Corps and the 2nd, which had been detached from the forces blockading Paris. This army was placed under General Manteuffel. This officer, hearing of the fight at Villersexel, had marched between Dijon and Langres, and stood on the 19th at Gray with two complete army corps. Here he learnt the retreat of Bourbaki and determined to leave only one brigade to keep in check Garibaldi's 30,000 men, pushing forward with the rest on Dôle, by which movement the fourth great catastrophe was produced. We reckon Sedan, Metz, Paris, and the entry into Switzerland.

In the north, Faidherbe had at last, in the beginning of January, made an attack on the front of Goeben's army, and had been repulsed at Bapaume by one division and a half. Soon after Peronne capitulated. In the middle of January, Faidherbe attempted to turn the right of Goeben's army, and tried to advance on Paris by Cambrai. Arriving on January 19 at St. Quentin he was attacked by General Goeben, who had concentrated his troops with his usual speed, and was totally beaten.

The remains of the French North Army once more fled, vigorously pursued, to the shelter of the north-eastern fortresses.

On the same day Paris makes a desperate effort; its last. 120,000 men leave the Mont Valerien and are repulsed by three brigades of the 5th Prussian Corps with the loss of 9,000 men. Eight days later, Paris capitulates.

On February 16 Belfort surrenders by agreement, The war is at an end. The French have directed all their efforts since the beginning of the siege of Paris immediately to its relief. Bourbaki's expedition forms the only exception, for, though intended to contribute to the same object, it was at first directed to a more distant point. This concentration of their whole strength on the relief of the capital has been blamed, and it has been held that they would have done better by transporting the war to other scenes. Paris, it has been said, exercised a magic influence on the French leaders, inducing them to make efforts for saving the city quite out of proportion to its importance as a stronghold. This view appears to us wrong for two reasons. One must take things as one finds them, and it cannot be denied that Paris has always exercised an immense effect upon the feelings of all Frenchmen, and always will do so.

One cannot deprive such a hot-blooded and excitable people of its idols all at once.

To treat Paris like any other city; not to hurry to its help would have created discontent and despondence throughout France. That is not all. Paris is actually of such importance as a strong place, that, even from the strategical point of view, the French appear to have been justified in directing all their efforts to its relief. The grounds of this importance are, first, its size as a fortress. An army resting on Paris has, in case of misfortune, an extensive place of refuge and supply where it can at need recruit itself; and, if its troops are of equal quality to those of the enemy, it can only be invested by very superior numbers. Paris is the greatest meeting-point of railroads in

France; it lies on a navigable river. Its sphere of influence is evidently very much greater than that of any other fortress. With Paris in our hands we should have a base which would render our expulsion from France impossible. This was evident to the dullest eye.

Therefore the French did well to concentrate all their efforts on the direct relief of Paris. If they wished to attempt to relieve the place indirectly, as did Bourbaki in the middle of January, such attempts should have been commenced about the middle of November, when there were still two months' provisions in the capital.

The operations for the direct relief, on the other hand, began in the middle of October, but before the organization of sufficient forces was complete. These operations were defective from want of combination and unity. No one seems to have thought of using the French fleet for the purpose of sudden concentrations upon some particular point; or was it thought impossible to do so? Yet the rapid transport of 50,000 men from a western harbour of France to a northern one, or the reverse, might have been easily effected by a marine like that of our enemy. Would the shipment of a great part of the Loire Army to a northern port, for instance Havre, have been such a difficult thing at the end of November? Might not the disembarkation of 60,000 men at Havre or Dieppe, intended to combine directly with Faidherbe, have created great embarrassments for the besieging army? And would not Havre, the sea, and the north-eastern fortresses have been a better base of operations than the south-west and west of France? The first condition for success in such an undertaking was clearly secresy.

The railways would have been of great assistance in collecting 50,000 men at a western port for the purpose of embarkation; they would have much expedited the movement in any case; and the sea-transport would have proceeded with great rapidity, if a fairly respectable number of vessels could be assembled.

The foregoing few remarks are submitted as questions, the

replies to which are left to the future and to others ; but, in presence of such a fleet as that of France, it appears to us allowable to ask, whether it might not have been included in the list of means available for aiding the concentration of troops with as much justice as were the railroads, the capabilities of which were, by the way, quite erroneously estimated during the movements on the Loire as well as during those of Bourbaki in the east ?

Thus when later a complete history of the war is written, it will hardly be able to affirm, in treating of the efforts made by France for the relief of Paris, that all was done which could be done to attain that object.

There was no powerful directing hand to make such masses unite in striving for the one great end, for, however well and energetically Gambetta might organize, or rather improvize, masses of troops, every time that he undertook to plan operations, whenever he interfered with the movements of armies, or attempted to play the general, it was proved to him in letters of blood what conditions he had left out of the reckoning, and that the art of war is one which can least of all be practised by an amateur. This is also one of the great lessons of 1870.

Soon after the outbreak of war, the French began to organize partisan corps, chiefly under the name of 'Franc-tireurs.'

These were principally intended to carry on a guerilla warfare against the German army. In general, France is not adapted to this sort of warfare. Extensive ranges of mountains and large forests are wanting, localities particularly favourable to a partisan war. But very broken countries, like La Vendée and Brittany, are also suitable. In the parts of France which were theatres of war, the districts most suited to the purpose are the Vosges, the Jura, a part of the Côte d'Or, the wooded country about Orléans, and, as above mentioned, Vendée and Brittany.

The French nation, as a whole too, does not furnish very

serviceable materials for the formation of partisan corps, because good living and luxury have deprived the people, to a great extent, of the power of bearing hardships and fatigue.

The French 'Franctireurs' of 1870–71 cannot, therefore, be compared with the Tyrolese sharpshooters of 1809, the Spanish guerillas of 1809–14, or the Polish insurrectionists of 1863–64.

That the French, nevertheless, gained many successes in 'la petite guerre,' and that the Germans were much annoyed by the Franctireur corps, is true.

They made many attacks by surprise upon our lines of communication, as at Vaucouleurs, Ham, Châtillon, the blowing-up of the bridge near Toul; but, when one reflects that the principal field of action for partisans must always be in rear of the operating armies, one can only consider these successes as of a very limited nature. The reason of this was to be found, not only in the above-mentioned circumstances, but in the strength of the garrison troops with which the Germans were always able to protect their communications with the rear. The Franctireurs were never able to maintain themselves in the Vosges. They always came out strongest where they had fortified posts, as for instance Langres, to fall back upon. Their activity in front of our armies was still smaller. The promotion of popular risings against us was an accompaniment of the Franctireur system.

A few words upon the legal aspect of this mode of warfare, a theme discussed from many points of view, and upon which people have not always very clear ideas. The formation of partisan corps, call them by what name you like, has been permissible in all ages by the law of nations.

Whether they operate in rear of the hostile armies, whether they lay ambushes or not, does not signify; none of these things put them 'hors la loi' as long as they belong to a corps formed by command, or with the consent of the government, or of the military authorities of the country, and as long as they wear a distinguishing mark of some sort. It does not matter whether they are natives of the country or foreigners.

The same rule applies to those who are called out to serve in the land itself. If these are levies like the French national guard, which was in part called to arms by government decree, such warriors must also be respected as actual soldiers.

Partisans, as also men who were called out to serve like the above-mentioned, put themselves beyond the law of nations, by conduct contrary to such law against single soldiers following their corps, and by traitorous proceedings. If, for instance, a body of the invading army is allowed to enter a town and then fire is opened upon it; if volunteers, going about by day in plain clothes, attempt at night attacks upon the troops quartered in a place, or lastly fire upon the enemy, and then put on civilians' clothes over their uniforms, they expose themselves to be dealt with according to martial law.

If, then, this sort of resistance is permitted, as French and other newspapers, and even military writers have recommended, it comes to this, that the occupier of a house, if he has courage enough, will in the middle of the night cut the throat of the soldier quartered upon him, and that will be called fair war. It is quite true that every citizen has the right to defend his native land, but only by serving in the army, or in auxiliary forces called out by regular authority. If people do not act according to these rules, as was often the case in France, no one must be surprised if the invading army protects itself by the sternest measures, and encounters treachery with sanguinary and violent reprisals; and, whatever character the war may then assume, those are responsible who first abandoned the honourable and hitherto recognized principles of warfare. The reprisals of the Germans generally fulfilled their object; this we maintain in opposition to assertions which have been made. Men think first of themselves and of their homes. If these are threatened, their resistance, however excitable the population may be, generally ceases; hence the system of terror is here quite in place. This 'little war' again gives us a picture of the mighty struggles of an unorganized against an organized popular force.

It affords an interesting study, and it is to be hoped that it will be minutely described in the official works which we may expect.

No Frenchman has ever gained much renown as a partisan; but a few Germans have done so, for instance, Pestel and Boltenstern.

Menotti Garibaldi, who was not a Frenchman, made a successful surprise of more than usual consequence with much ability.

The Garibaldian volunteers, by the way, according to all accounts, treated their prisoners very well; which cannot always be said of the French.

The German army had to encounter, in 1870–71, two differently organized armies and two systems; those of the Empire and of the third Republic.

The first, resting indeed upon a national foundation, but on the system of substitution, had assumed to a great extent the character of a mercenary army; for those men who served in place of others were mercenaries in the widest acceptation of the term. It is evident that every army must contain a considerable number of soldiers who make it their profession, and are required to train the recruits; the French *remplaçant*, however, did not serve with this object, but simply to take another man's place.

The army of the Republic consisted, to the extent of five-sixths, of the citizens just called to arms, who had been trained at the utmost for four or five weeks, and that generally in a very imperfect manner.

This *system*, if it is worthy of the name, cannot naturally be adopted permanently by any state. It just served as a makeshift, to which the desperate state of affairs reduced the nation. The principal lesson to be learnt by the conflict between these levies and the Germans, is the inferiority of the former when opposed to well-trained and experienced troops. These newly

aised soldiers, even when with three or four times the numbers f their enemy, though fighting bravely, never gained a success. And yet the circumstances were as favourable to them as possible; they were in their own country, supported by partisan warfare and insurrectional movements. All these means failed against the army of the German people. Perhaps, they would have been of more avail against armies based upon other foundations than is ours.

A force, in which substitution is allowed, could not have mustered in sufficient numbers, and perhaps would not have shown the same enduring tenacity in a war of like duration as did a true people's army.

We see then, after Sedan, a well-organized popular army in conflict with one in great measure improvised.

Between the well organized popular force and the improvised levy comes the militia. It is founded on the same principles as the German popular army, that is, upon the liability of all citizens to serve without substitution. But the two forces differ widely in their organization.

The Prussian system of 1860 provides a number of cadres of officers and non-commissioned officers, in which are incorporated the young soldiers of from two to three years' service, of whom a fixed number are always present. The strength of the cadres thus renders it possible to carry on instruction of all kinds throughout the year.

These corps are, in war time, completed to a fixed establishment by the reserves, and form the first field army.

The Landwehr, for which in peace time a staff of only thirteen or fourteen men per battalion is kept up entirely for clerical and administrative purposes, has no cadres, and is used at the outbreak of war for completing the depôts, for garrisons,[1] and as a

[1] 'Ersatztruppentheile.' When war breaks out, every corps forms a depôt for receiving and training recruits. These come from the 'Ersatz' (in which are enrolled all men of the military age who have hitherto escaped military service), from the younger classes of the Landwehr, and from the ordinary annual contingent. The depôts are officered from the regular army and from the Landwehr.—TRANSLATOR.

mobilized reserve. We have not given up using Landwehr troops in the field, but keep them in second line.

The militia system, up to the present time only in force in Switzerland, provides nothing but a Landwehr, which, according to age, is divided into two levies.

Regular cadres, as in Germany, do not exist. The training of the young men is carried out by forming bodies of 'school troops,' and lasts for three or four, even six months, in fact throughout the first term of service. The militia system had many admirers in South Germany, and many people advocated its adoption in preference to our military system. Modern wars, particularly that of 1870, will have thrown more light on this subject.

The militia system of Switzerland has never been really tested. One cannot, therefore, form a decided opinion as to its capabilities; but the wars against Denmark, Austria, and France furnish materials enough for further evidence as to the inefficiency of every militia system for war on a large scale; that is to say, of a system of very short service and no proper cadres. It is certainly true that army formations in France after Sedan were improvised, and that, notwithstanding, the aid afforded by the many retired officers and non-commissioned officers in the organization of these new levies, they never once attained as high a level of instruction as is found in a militia army; but there was one point in France where the most hastily raised troops had time enough to perfect their organization and training to a greater degree than in any other place. That point was Paris. More than two months elapsed from the time of its investment to that of the sorties at the end of November.

In Paris there were 60,000 troops of the line and many depôts. A great number of old officers and soldiers had made haste to place themselves at the disposal of the Government by joining the 'Garde Mobile,' and an experienced hand directed the whole. The instruction of the men was carried on with zeal. Their ardent patriotic spirit made them willing. A series o

little combats accustomed them little by little to fire. Yet they showed in all the sorties during November and December little power of manœuvring, and bad 'fire-discipline.' We can but form the same opinion of the 'bataillons de marche' of the National Guard on January 19, though they had been above four months under arms. Would the newly raised levies in Paris be so very inferior to infantry formed on the Swiss model? We think not; although we should be inclined to allow more steadiness to the latter even from the first, than the 'mobiles' and 'mobilisés' of Paris could boast of at the end of January.

We must seek for another proof of the inefficiency of a short-service militia in the fighting experience gained by our own infantry. If the well-trained German infantry, composed of men experienced in all branches of military duty, from an uninterrupted service of two or three years, now and then got into a state of dispersion, which almost put an end to all control over them; how would infantry whose training is so very much shorter than ours fight and move in the great skirmishing actions of the present day? The very great demands which we must now make on the 'fire-discipline'[1] of the troops would be too much for soldiers of such short service. We shall be told of the military training for school-boys, which enables them later to enter the army to a certain degree drilled and instructed. This instruction of youths can only be very restricted, because children cannot be practised in a great many things necessary for military training without injuring their health and stopping their growth. A body of soldiers does not gain the firm cement of military cohesion by the previously acquired knowledge of its young recruits. Such knowledge is however always valuable, if the school military exercises are carried on in an orderly manner, instead of, what is often the case, the young folks being accustomed rather to a sort of military tomfoolery than to the stern reality of actual

[1] 'Feuerdisciplin.' We know no equivalent expression in English equally concise. The meaning of the word when literally translated is obvious.—TRANSLATOR.

drill. The warfare of the present day makes great requirements on the individual soldier, and on the subaltern officer in the great engagements of skirmishers, in which infantry now carry on the battle and contend for victory. For, the greater the dispersion, so much the less the power of command.

The present work is upon tactics. We shall make no mention of the other defects of a militia system as it affects cavalry and artillery, but confine ourselves to the principal arm which does the chief work of battle; that is to say, the infantry. We will give a tactical example founded upon the experience gained by our army against Danes, Austrians, French line and guard regiments, volunteers, Garde Mobile and mobilized national guard, of the conduct which one may expect from a battalion formed on the German model and from that of a militia battalion.

We supppose our battalion to be drawn up in company columns in a defensive position, behind an undulation of ground, in front of which however, and pretty close at hand, is cover which would shelter an enemy. Three company columns are in first line, one in reserve. The enemy, who is twice our strength, deploys at from 1,000 to 1,200 paces, throws out numerous skirmishers, and doubles forward to within 800 paces. He then commences a steady fire, under cover of which he directs some companies on our left flank, taking advantage of a ravine to shelter them during the movement. Our militia battalion at once replies to the skirmishers with a rolling independent fire, in spite of the remonstrances of some of its officers; but this fire, hotly and hurriedly delivered, does little harm to the enemy.

The latter advances by a succession of rushes over the hilly land, and throws forward his skirmishers at the double, with supports behind them, across a little plain situated under fire of our militia battalion and about 300 paces from its line of defence. After crossing this without much loss they find shelter behind another rise of ground; the fire of the militia, begun too soon, goes mostly over the enemies' heads, because the men have in the hurry of the moment neglected to alter their sights. The

enemy, who has established himself pretty close, now opens a sharp independent fire. At this moment the head of the detachment sent round by the ravine, appears on the left flank of the militia, and already causes some of the men on the extreme left to retire. The reserve company is ordered up. It hurries out at the double, and turns half left to meet the flank movement. But owing to its want of cohesion it is a good deal scattered before it gets near the enemy. It takes a long time to extend the company's skirmishers, who, notwithstanding the captain's shouts, take a wrong direction, are received with a sudden deadly fire from the enemy's skirmishers (who unexpectedly appear before them), waver and turn tail, carrying off the support with them. At this moment the enemy's line attacks in front.

The rest may be left to the imagination.

The battalion of our German popular army behaves differently. Only a few men answer the fire of the enemy who has deployed at about 800 paces ; our reply, becoming for a moment too sharp, is checked at once by order of the officers.

When the enemy attempts to cross the little plateau, we receive him, at 300 yards, with so heavy an independent fire from the whole line, that he wavers and runs back to cover. The turning movement becomes apparent.

The reserve company wheels, turns half-left at the double, without getting into disorder, and throws out its skirmishers with great precision. They advance in the right direction and come upon the enemy before he has completed his extension. A heavy fire followed by a rapid charge and the flank attack is repulsed.

Our intention in giving these examples will be easily understood.

We wish to show :

1. That discipline is not good enough in a militia force to admit of a sufficiently cool use of firearms in an emergency ;

2. That the power of manœuvring, being at all times defective, fails at the critical moment and leads to false movements, which

are very likely to give an unfortunate turn to the fight at the particular point of importance.

We shall find the same difference between the two forces in respect of marching powers and of discipline on the line of march.

As under the militia system there are no permanent formations, the instruction of officers will not reach a sufficiently high standard to enable them to enforce their authority with the certainty which is above all things necessary with troops of this description. A militia force may, however, be very useful even for great operations in the field, if under experienced officers, when it has time to acquire in organized bodies the necessary qualities, such as cohesion, discipline, power of manœuvring. Now-a-days, however, the time will rarely be given, for the concentration of troops by means of the railroads, after the mobilization is complete, is accomplished with such despatch, that in some cases a few days will bring them in sight of the enemy. The war of 1870 furnishes numerous examples thereof.

The 5th Corps commenced on July 25 its movement from Posen to the Rhenish Palatinate, the infantry reserves having only joined their regiments on the evening of the 23rd. The first trains arrived at their destinations on the evening of the 28th. On the evening of August 2 the corps was ordered to concentrate. This was effected in bivouac at Lixheim and Rohnbach. After a march of four miles the corps fought on August 4 at Weissenburg, on the 6th at Wörth.

There were thus about two or three days disposable during the continuous movements in the Palatinate to accustom the men again to order and discipline,[1] and to practise some of the battle evolutions. And the same conditions prevailed pretty nearly everywhere. A militia force could not have been made fit for action in so short a time.

[1] The men referred to by the author as requiring to be again licked into shape are of course the reserve men, of whom there would be about 400 in each battalion, about 60 in each cavalry regiment, and from 40 to 55 in each battery. — Translator.

The organization of our Landwehr has this in common with the Swiss militia, that it may be said to have no cadres.

But the men have all served their two years, some three years, in the line. Besides this, the officers of the line and Landwehr have naturally been brought into close connection. Yet this force required rather more time than the line to gain a certain finish, to accustom the men once more to discipline; in short, again to render itself fit to encounter the enemy with success. The German system allows time for all this, because permanently embodied corps, not Landwehr, form the first line.

Hence we deduce that the German military system, the well-organized people's army, can alone enable us in the present day to set masses on foot, to convert those masses into real soldiers, and to transport them speedily to the scene of action.

This system with some modifications is being imitated everywhere. But we do not thereby entirely lose our preponderance, because we have the advantage of sixty years start; still other states will gain the power of assembling larger masses, and of introducing more intelligence into their ranks than heretofore. This renders it all the more important that we should devote the greatest possible attention to tactical matters. We have defeated an enemy, as well, nay better, armed than ourselves.

We shall again conquer, even if in the next war a well-organized people's army encounters us, as long as we do not fall off in endurance, as long as we preserve those Spartan sentiments, which enable our people to bear great burdens cheerfully, and as long as we maintain our high standard of tactical instruction.

III.

GENERAL OBSERVATIONS ON HOW THE TROOPS WERE LED, AND HOW BATTLES AND COMBATS WERE FOUGHT IN THE WAR OF 1870-71.

INFANTRY is the arm which carries on the fight throughout, and finally decides the battle.

In the war of 1866 we saw the infantry on one side armed in such a superior manner to the other side as by that alone to have a great advantage.

The tactics of the two infantries differed so greatly that it was not difficult to recognize the main points of dissimilarity.

The Austrian infantry pursued a system of offensive tactics, and truly a very faulty one, opposed as it was to the needle gun —to wit, that of the direct shock of masses with the bayonet.

Prussian tactics were also essentially offensive, but before the attack a full use was made of rapid and accurate fire; or, resuming the defensive, they crushed the charging masses of the enemy by the heavy fire of skirmishers, or by the rapid file-fire of troops in close order.

Moreover the Prussians showed incontestably greater dexterity in skirmishing and in taking advantage of the ground. Their formations were mostly company-columns with swarms of skirmishers; whilst the Austrians made use of double companies or battalion masses. It was otherwise in 1870. On both sides was found the breech-loader, and both infantries were almost equally expert in skirmishing. The French had certainly a rifle superior to that of the Prussians, but this superiority was in a far different degree to that of the Prussian needle-gun over the Austrian

muzzle-loader. Although taught on different principles and fighting in different formations, the French and German infantry in their sharp engagements did not present nearly the same striking difference of tactics as was displayed by the contending armies in the Austrian campaign, and the similar armament of both parties of itself impressed a greater stamp of similarity upon their styles of fighting than was the case in 1866.

Then the Austrian infantry opposed the power of physical force to the idea of individual self-reliance which was embodied in the Prussian tactics—or, to use merely military language, masses in close order succumbed to skirmishers and to the action of subordinate officers; the bayonet gave way to the fire-arm.

In the French war, as a general rule, the infantry on both sides fought in extended order.

The dissimilarity of formations did not come prominently forward, but many differences are to be remarked in the modes of firing and of handling infantry in battle.

The way in which the other two arms, cavalry and artillery, were employed on each side differed much.

It will now be our task to consider:

1. What forms the conflict generally assumed under these conditions?

2. What differences appeared in the tactical conduct of the three arms on both sides?

We shall begin by considering the general nature of the fights without in the first instance inquiring into the action of each separate arm.

The combats and battles of this great war present such a variety of pictures; the circumstances of general situation, of time and place, are so different; lastly, the quality of the troops opposed to the German armies in the first part of the campaign was so far superior to that of the masses fighting against them from October onwards, that with regard to the nature of the engagements one can only direct attention very generally to the prin-

cipal characteristic features of the tactics which were carried out. For how various are the conditions of battle, and how often do the circumstances of the moment dictate a mode of action which in another place and at another time would be considered prejudicial! On what a wrong track should we then be, and what fruitless labour should we undertake by searching for leading principles constant and unchangeable, whether for attack or defence! If, however, in the tactics of an army an idea is constantly present; if these tactics consist of something more than the working out of forms and evolutions, the endeavour to carry out this idea will be manifest almost always throughout the fight, at any rate at its opening.

This comes out especially in the offensive; more than on the defensive when the adversary often gives the law.

The main idea then apparent in the German tactics of 1870 was: A front attack is difficult, let us try the flanks.

This rule will meet most cases in the present day; but even a higher rule is that which bids Prussian generals to act upon their own responsibility; and they generally were conscious that they must come to an independent decision based upon existing circumstances, and upon the requirements of the moment. Thus we see even these 'turning' tactics frequently modified when the state of things demanded it.

On the other hand we remark that, in the first part of the war, the French almost always remained on the defensive. Whether this was the consequence of the tactics ascribed to Marshal Niel, namely, to await the enemy in positions quickly intrenched, to beat him back by fire, then only proceeding to the attack; or whether this constant defensive was only the result of the quick strategical offensive of the Germans we know not, but we believe in the latter solution.

Had it been possible for the French to assume a strategical offensive, it is not probable that they would have followed the system of acting strategically on the offensive and tactically on the defensive, but rather they would have chosen the part of

assailant in the field of battle under tolerably favourable circumstances. It was principally the surprise of the German concentration and their own inferiority of numbers which reduced them to a tactical defensive. Their knowledge, however, of the increased strength of the defence, of the power of far-ranging firearms, and of the use of field-works may have contributed to render these defensive tactics more acceptable: enough; we find at Weissenburg, at Wörth, at Spicheren, at Gravelotte, at Sedan, the French always fighting defensively. Even at Mars-la-Tour, where they had the strongest inducements to take the offensive, they did not employ at the most more than a quarter of their force in this manner.

In the forward marches of the German armies and of independent corps we remark an advance-guard of all arms with cavalry at the head, even in broken ground. If they came on the enemy, a larger body of cavalry was often brought to the front to reconnoitre. The infantry of the advance-guard was usually kept further back than in 1866.

It is evident, in most of the fights, that pains were taken to avoid the fault of seriously engaging the advance-guard without fitting support from the main body.

This did not, however, prevent the Prussian generals from being in every way equal to the occasion, and from beginning the fight at once, if in the special case it appeared advisable.

If after this it was wished to open the battle in earnest, no time was lost in deploying a strong force of artillery, which generally took post in a connected line at the distance of from 2,000 to 3,000 paces, endeavouring by its fire to cover the further deployment of the main body and to shake the enemy. The division artillery and the greatest part of the corps artillery of the army corps engaged, were usually employed for this purpose.[1] At Weissenburg, at Wörth, at Vionville, the fight was

[1] The division artillery of each army corps consists of eight batteries = 48 guns, i.e. 24 guns per division. The corps artillery also consists of eight batteries = 48 guns.—TRANSLATOR.

commenced in this manner. Spicheren was, as far as we are acquainted with the circumstances of the fight, an exceptional case, and bore the greatest resemblance to the actions of 1866, in which the advance-guard became usually hotly engaged, frequently got into difficulty, and could only be supported by successive reinforcements from the main body.

The German artillery was employed on the largest scale in this manner at Gravelotte and at Sedan. Long lines of guns kept up a fearful fire upon the French positions, shattered their formations, and silenced their batteries. We see the French artillery, utterly unmindful of old Napoleonic traditions, in general, not bringing forward sufficient force to meet the massive array of German cannon. We observe no particular cohesion in its formations and manœuvres. They worked generally by single batteries ; rarely were they able to form a line of guns equal to ours in extent. The inferiority of their guns was the very thing which should have induced them to mass their artillery, as it would have been the best way to neutralise the superiority of our guns.

The French batteries which came into action singly were often silenced in a few minutes by the precision of our fire. At Wörth the French artillery fire became uncommonly slack after a couple of hours, and only began again to be heavy when the German infantry commenced its forward movement towards the Sauer. French artillery tactics very much resembled those adopted by us, much to our own hurt, in many of the actions in 1866. We said that, on the German side, the intention was generally evident of attempting to turn the enemy. But the fight often developed itself in such a manner that, after preparing the way by artillery fire, the Germans made a vigorous attack upon the French centre without waiting for the effect of the movement on the flanks.

This mode of action has often been criticised, and attention has been called to the enormous sacrifices which it has generally entailed ; but these critics forget that, when you wish to force

the enemy to fight, a fairly sharp attack in front is often necessary to hold him fast, otherwise he would avoid the turning movement, which is meanwhile going on, either by a timely retreat, or by throwing himself upon the turning column and attacking it whilst executing its movement.

At Königgrätz the Prussian commanders contented themselves (not to mention the fight of the 7th Division) with a heavy cannonade and the advance of the 1st Army over the Bistritz; whilst in many actions of 1870 sharp infantry attacks were developed upon the French centre before the flanking corps could come into play. Much depends here upon the tactical object; whether you wish to force the enemy to fight or to manœuvre him out of his position; much also upon the special circumstances.

In judging of a fight we must above all remember, that one side has rarely a clear idea of the strength of the other side.

Before trying to turn both the enemy's flanks you must, as a rule, make sure of your numerical superiority. The operations of the 3rd Army on August 4, as well as on the 6th, seem to have been planned with a view to partially turning the enemy's flanks. But, in executing this, we observe that both at Weissenburg and at Wörth the centre was sharply engaged. If this had not been done at the former place, the French division Douay would certainly have withdrawn without a disaster, before being turned by the 11th Corps. Wörth was an *impromptu* battle. The intention was only to fight on the 7th; and the battle took place on the 6th, because a reconnoitring skirmish of the 20th Infantry Brigade led to an attack being made by the 2nd Bavarian Corps.

Nevertheless it is evident, that the German commanders meant to act upon the flank.

If, as may be urged, the advance of the 11th and 2nd Bavarian corps against the French wing, was at first not of a turning nature, yet the attack on the French centre, particularly at the village of Fröschviller, became in the afternoon a turning move-

ment in consequence of the left wing division (Ducrot) having been forced back, and of the defeat of the right wing. The 11th Corps also received the orders applicable to the occasion from the commander-in-chief.

The German centre, the 5th Corps, as we see, attacked the French centre (Division Raoult) also in front. As the battle, suddenly begun as it was, took more the form of a front attack, the 5th Corps could not remain inactive, and by its movement greatly lightened the task of the 11th Corps, which had to extricate itself from the defiles near Gunstedt. The attack of the 5th Corps on the centre was one of the most difficult executed during the campaign. The 10th Division had in great part to cross the Sauer on foot bridges made of planks and hop-poles, under a very heavy fire, then to pass over a meadow, and to storm the heights occupied by the enemy.

The losses of this division prove what a serious matter it is to make a direct attack against the breech-loader. They amounted to about 4,000 men.

The French neglected in the centre the only offensive movement which promised success ; namely, a general attack upon the German troops immediately after the first brigades had passed the Sauer ; and confined themselves to a passive defence of the heights with partial sallies.

But also in the other glorious battle on the same August 6, at Spicheren, the fight did not commence in consequence of the commander's dispositions, but of the peculiar circumstances of the moment, and of the independent action of subordinate leaders. This battle was fought under extraordinary conditions, and is beyond all others a proof of the self-relying conduct of which our generals were capable. The 14th Division was exposed to fearful risk by being engaged as it was, and scarcely with a sufficient motive. A false report that the French had retreated is said to have occasioned its advance over the 'Exercirplatz.' When once seriously engaged it could not do better than to attack vigorously (so as to prevent the enemy from

assuming the offensive), relying on the support of the troops coming up from the rear. This did not fail, for they hurried up from all sides at the sound of the cannon with eager zeal. But notwithstanding the inferiority of their numbers in this action the Prussians tried to bring turning movements into play, which appears all the more judicious, when you consider what a fearfully strong position was that of Frossard. The 14th Division, which ran the risk of engaging its twelve battalions against thirty-nine, failed in its attempt to turn the enemy's right flank; but, later in the day, a flank attack of the 5th Division, which came up in the afternoon, succeeded. At the same time here also the French centre was successfully attacked in front, and all difficulties were overcome. In this combat thirty Prussian battalions came little by little into action against thirty-nine French battalions. The appearance of the advance-guard, 13th Division at Forbach, may certainly have contributed to Frossard's retreat. But here, as at Mars-la-Tour, the Germans fought for a long time against a most decided superiority of numbers.

The last-mentioned fight so far resembles that of August 6 at Spicheren, in that the attack was undertaken by inferior numbers with the greatest boldness and with a similar result. Here again the French attempted no general counterstroke, which could in both cases have hardly failed to succeed, probably because they believed that much stronger forces were behind the bold assailant. The difference between this fight and Spicheren lies in the fact, that military science can have no fault to find with the attack of the 3rd Corps on August 16. The object lay clearly before us; it was the task of all the corps which crossed the Moselle on this day to bring the retreating army of Bazaine to bay; thus the immediate attack of each separate corps was certainly imperatively demanded by the actual circumstances of that morning. The situation of Spicheren was not exactly similar. The determination of the general to attack proceeded here from the reports of the supposed dispositions of the enemy. In the battle of Mars-la Tour, the offensive power and the stubborn defensive qualities

of the German infantry were alike admirable. The 3rd Corps, which on that day lost nearly 7,000 men, first gained ground on a superior force of the enemy, and continued to retain it against partial counter-attacks, until supported by the successive arrival of other corps.

On the day of Vionville[1] the French contested the victory with unbroken strength. The Prussians had gained but little ground by evening, but the strategical object had been completely attained. On the next day the French army retired into a position near Metz.

The battle of Vionville is also remarkable for the manner in which cavalry came into action. (See Chapter on Cavalry Tactics.)

In the greatest battles of the war, those of Gravelotte and of Sedan, the turning-tactics come prominently forward. The dispositions for the former battle which were given out bit by bit during the march, as the reports came in, and which were calculated to search out and surround the French right wing, had been so far carried out by midday that the 7th, 8th, and 9th Corps stood nearly parallel to the French position reaching from Rozerieulles to Roncourt. The movement of the Guard and 12th Corps intended to turn the enemy's flank was not yet completed. The battle commenced at this time along the whole line. The artillery of the 7th and 8th, and notably that of the 9th Corps, chose its positions with uncommon boldness so near the enemy, that the infantry was obliged to come into action if only to cover the guns. In the afternoon we took the offensive on the right, but without success. Towards evening indeed we lost ground on that side, and the fight was restored by the arrival of the 2nd Corps, which however was unable to storm the position of the French left wing. The farm of S. Hubert alone fell into our hands.

We should think that the task of our right wing and centre

[1] The author is still speaking of the battle of August 16, which is called by the name of either Mars-la-Tour or Vionville, both which villages were on the battle-field.—TRANSLATOR.

hould have consisted like that of the centre at Königgrätz in nerely fully occupying the enemy's attention. Whether the at-empted infantry attacks were necessary for this purpose, or vhether they were made on other grounds, will be made known ıereafter. The movement to attack of the 49th Brigade against Amanvillers, which took place at the same time as the assault of he guard on S. Privat, was intended doubtless to support and faci-itate the latter operation. Neither attempt succeeded at first. The attack of the Guard could only be renewed after the fire of 220 guns had again prepared the way, and after the movement of he Saxons had been executed: then came the finishing stroke. S. Privat fell before the united attack of the Guard and Saxons, nd Canrobert's corps was driven back in a state of dispersion. At the same time as the Guards and Saxons made their attack, he 3rd Guard Infantry Brigade and the 49th Brigade advanced gainst Amanvillers.

The former reached the height west of that village, the latter s far as the railway house, where it maintained itself. Upon his the Corps l'Amirault commenced its retreat from Aman-illers.

The first attack of the Guard, undertaken with brilliant valour, urnishes another proof of the fearful effect of the breech-loader, nd hence of the increased power of the defensive.

Certainly no troops were more likely to succeed in a direct ttack than the Prussian Guard, a corps which could boast of lorious traditions both old and new. Yet it was necessary in he end to wait for the flank movement. According to some ccounts the echelon formation was used on the extreme right f this attack, and did not answer, which seems to us very atural.

At Sedan the turning movement was complete.

It was of course necessary to make vigorous attacks on some oints of the French position, so as to take off their attention rom the circular enclosing movement of the Germans, which was ot completed until about midday, and then not entirely, for

a considerable gap remained between the 5th Corps and the Guards.

It is self-evident that, when one army so completely surrounds another, the attacking line must be very thin in many places. Therefore, although the Germans were on the whole superior in numbers, they did not retain this superiority in all parts of the field; on the contrary, the enemy were in greater strength on many points.

The tactical idea which pervades the operations of the Germans on the battlefield is, therefore, easy to recognize in spite of many modifications.

Although they were frequently obliged to make front attacks, the principle of the turning movement always asserted itself.

In any case, however, a direct infantry attack should always have been undertaken in sufficient force. But this was too often not the case, so that weaker forces exposed themselves to suffer great losses in long-continued doubtful conflicts, gaining at the same time but little ground. The extraordinary tenacity of the soldiers, who when driven back always rallied and came to the scratch again, together with the intelligence of the subordinate officers, had here and there much to do to set things straight. We can, by the way, often recognize an attempt on the part of the higher officers to remedy a defect noticed in 1866 (that of letting the troops get too much out of hand), by keeping back strong reserves, with the view of using them later as appeared advisable. It is very difficult in this matter to do the right thing, and to avoid falling into the error of letting the infantry, which is already engaged, expend itself; and at the same time not to commit the other fault, of giving ear to every call for assistance, and of engaging the reserves prematurely in the raging fight, when the commander naturally loses to a great extent his hold over them.

The infantry on both sides did the chief part of the fighting, notwithstanding the vigorous action of the artillery. This time also (as in 1866) there was no question of a battle decided by

rtillery. Almost always an advance of infantry gave the finish-
ng stroke, and this advance might often have been delayed with
dvantage until the artillery had prepared the way even more
han it did.

When a position was carried, the quickness of the artillery in
oming to the front and endeavouring to cover the further ad-
ance of the troops is a feature in our tactics worthy of notice.
For instance, Spicheren.)

The action of cavalry in battle was confined, in the great
ajority of cases, to charges by regiments and squadrons.
Iars-la-Tour alone is an exception. Here cavalry masses found
mployment, and on favourable ground; they checked for a
me the advancing enemy, by their impetuous onset.

The order of battle could rarely be maintained even by the
ictorious side, after the infantry was once seriously engaged,
owever complete the formations of the regiments may have
een before the action commenced.

Fights in villages and woods were as common as ever, thereby
isproving the assertion made before 1870, that such combats
ould be more rare than in former days. It was certainly re-
arked that the French threw less troops into the woods than the
Germans, all the worse for the former. But to this subject we
hall return further on.

We have already shown that the Germans of 1870, like the
Prussians of 1866, attempted, when attacking, to turn the flanks;
n saying which it is of course necessary to except cases in which
odifications of this system were rendered necessary by the
pecial situation. How did the French meet these turning
actics?

According to old tactical rules, as we may find them detailed
n every book of instruction, their best way of meeting such a
ove would be by a vigorous attack with a concentrated mass
pon some point of the necessarily thin and extended line of the
nemy. But 1866 had already shown that this was no longer
asily practicable, because so fearful are now the effects of fire

that direct attacks present great difficulties, and therefore demand so much time as to give the adversary leisure to reinforce the threatened part of his line. These turning tactics are hereby justified. But they are only possible with an army in which tactical training, armament, determination, intelligence on the part of the teachers, and endurance on the part of the masses, are of such a high character as in that of Germany.

But in spite of these undoubted drawbacks the French might at least have tried the effect of an attack upon a point of the line which was surrounding them. Such an attempt must of course be made with a strong concentrated force, to have any chance of success against an army as capable of manœuvring as was that of Germany. If you allow an enemy to complete the operation of turning or surrounding you undisturbed, you get into a very bad plight unless you have taken position in a natural fortress.

French tactics, then, were entirely deficient of the offensive element on a large scale, by which, with inferior numbers even, you may gain great advantages if you are in a position to make rapid concentrations and advances on decisive points. Partial counterstrokes on isolated points of a battlefield, such as the French made frequently and with great bravery at Sedan, can only have a momentary effect.

Although one can very rarely know for certain one's adversary's intentions, energetic *reconnaissances* will always throw some light upon them. The rest must come from the power of combination of the general, from that lightning flash of genius which inspires him with a knowledge of his enemy's designs, that truly warlike genius which is as different from ordinary military talent, however high it may be, as history itself is from a historical novel of Mühlbach.

For what art can surpass that of the general?—an art which deals not with dead matter but with living beings, who are subject to every impression of the moment, such as fear, precipitation, exhaustion, in short, to every human passion and excitement.

The general has not only to reckon with unknown quantities, such as time, weather, accidents of all kinds, but he has before him one who seeks to disturb and frustrate his plans and labours in every way; and at the same time this man, upon whom all eyes are directed, feels upon his mind the weight of responsibility, not only for the lives and honour of hundreds of thousands, but even for the welfare and existence of his country. For in the nineteenth century war is not carried on for little dynastic aims; the gain or loss of this or that province is not alone in question, but often the object of the war consists in the ruin of a dynasty, the annihilation or fulfilment of the national aspirations of a whole people. So much the greater becomes the general's responsibility!

One of the principal qualities of a commander in all times has been the power of forming a right estimate of his adversary's character, and of basing his own plans upon the defects of the enemy, upon those of the enemy's general, and upon the condition of his army. A few words upon Beaumont.

This wonderful surprise in broad daylight is an almost unexampled instance of carelessness and indiscretion, not on the part of a victorious army which, excusably or not, now and then becomes careless, but of one already often beaten, and which again on the same day got into an awkward position.

This action, with reference to want of common care on the part of the French, is only to be compared to Rossbach, Hainau, and the surprise by York's Corps the night after the battle of Laon. The bad way in which the French perform outpost duty has passed into a proverb; this is partly caused by want of discipline. Whilst the German soldier, whether he likes it or not, after perhaps a five mile march,* or a battle, will be sent on outpost duty, if need be, at once; French officers in many cases do not dare to demand such an exertion from their men. 'They must first provide for his subsistence.'

[1] It should be remembered that when the author speaks of a mile he means the Prussian mile = $4\frac{3}{4}$ English miles, nearly.—TRANSLATOR.

The day of Beaumont[1] was also remarkable as one of uncommonly hard marching for the 3rd Army. The action of the different corps of the two German armies (Tann's, the 12th and 4th Corps) was energetic and self-relying, whilst De Failly remained without support.

The worst thing Napoleon could do after August 30 was to fight a defensive battle. His strategical position after Beaumont indicated the course to pursue, namely, to make a concentrated offensive movement on one side or another. His being enclosed between Meuse, Chier, and the Belgian frontier was an additional reason for the attempt. Whatever the state of the troops might be, and however doubtful success might appear, the situation was already on August 30 so desperate, that the only chance of getting out of it was to make a desperate exertion. An attack along the Chier might have been made on August 31, or early on September 1, against the right wing of the Meuse army, or else a forced march on Mézières by Vignes-aux-Bois. It was impossible to break through without immense loss. Perhaps of half the army, perhaps of four-fifths; but this would have been better than to wait quietly at Sedan while you are being surrounded. They did not expect this. They prepared for the passive defence of a position.

The German commanders formed a correct estimate of French generalship and of the state of the French army. The confidence which we were justified in placing in our army and

[1] On this day the discouragement of the French was very great. The author saw two companies which had separated from De Failly's corps, and which chanced to meet the head of the 10th Division. Although their retreat was not cut off, they made signs that they surrendered. By chance some men fired into them, upon which they took to flight. But the two captains came over to us and surrendered, saying, 'Il n'y a plus rien à faire avec cette canaille là'—As a pendant to this anecdote, a French prisoner after Sedan told me with an expression of intense disgust, 'Nos chefs ce sont des canailles. Ils m'ont défendu de manger une pomme'—The French were often eating when they ought to have been marching. 'Il faut que le soldat mange la soupe avant de se battre' was almost an article of faith. No doubt the principle that a soldier must eat to be able to fight is an old and good one; but he should be made to understand that it may at times be necessary, and that it is possible, to fight a battle without having had his bellyful of soup or coffee.

army corps commanders, contributed much to our general system of tactics.

Thanks to the marching powers of the men, these generals were able to, and did, adhere conscientiously to the routes prescribed for their corps, but also had self-reliance enough to take a decided line of their own without waiting for further orders, if things turned out differently to what had been represented to them. The system which Napoleon I. had established, of giving general directions to corps-commanders, but allowing them a certain freedom of action, was still more carefully and thoroughly developed in the German army under Marshal Moltke. Here we must take notice of a peculiarity of the present German organization, the action of the general staff. In its modern form this department was founded by Napoleon I. It assists in directing the great armies of the present day. But never before in military history has the general staff attained a greater practical importance than in the wars of 1866 and 1870. The general staff officers doing duty have extensive authority in the German army. Dispositions for the march and for battle, as well as all orders of detail, are generally given out by them of their own accord. The commanding general gives his general directions; all executive arrangements are left to the officers of the general staff.[1] After this digression we will conclude our chapter upon the general system of battle tactics.

When on the defensive, in which position we found ourselves during the blockades of Paris and of Metz, as also in isolated cases on the Loire and in the North, lastly in Werder's battles and against Bourbaki, the German troops fought against the attack of superior numbers with their peculiar steadiness and coolness, using their firearms according to the rules which had been impressed upon them.

The defensive does not offer nearly so large a field as the offensive for remarks upon the changes which have taken place

[1] This appears to be the *theory* in all modern armies. How far it is carried out *practice* depends much on the training of the staff in peace time.—TRANSLATOR.

in tactics. We remark that our commanders took advantage of the thorough training, powers of marching, and discipline of our troops in their choice of positions and in the mode in which they were occupied ; as also in the performance of attacks upon the flank, often occupying a larger extent of ground than according to theory was allowable, because they could be confident of being able to reach quickly points suddenly and strongly threatened.

They were all the more justified in thus acting, because the system of firing of our infantry could be carried out with much more calmness on the defensive than on the offensive, and because the natural coolness of the German makes him eminently suited to defensive operations.

The shooting tactics of the Germans consisted simply in firing at short ranges, a practice which always had the best results.

The main position selected was generally strongly occupied in first line. It was rightly judged that a strong development of fire at the commencement of an action was necessary and advisable. Separate strong masses in reserve, not a great many little reserves, were formed. If there was sufficient time, the position was divided into sections and prepared for defence as well as possible. On the approach of the enemy, the artillery was at once deployed into a connected line. The cavalry having at first been pushed forward to check the enemy's advance, was then withdrawn behind the line of defence. The German commanders, when on the defensive, were very successful in guessing the intended direction of the enemy's attack. For instance, Werder had occupied most strongly the shortest line on Belfort, open to Bourbaki's attack, on all other points of the line which extended seven 'stunden' (about seventeen-and-a-half English miles), he was so weak that his troops rather formed a thin veil along the position than occupied it.

It may fairly be said of the French offensive that their employment of artillery after Sedan began to improve, of which some of the actions on the Loire and the combat at Héricourt

are examples. They also showed a slight wish to imitate Prussian infantry tactics.

They had every excuse for doing this, as the Loire army under Paladines, Chanzy, and Bourbaki was almost always very superior in numbers to the Germans, but the troops were so little capable of manœuvring, and the subordinate officers were so miserably bad, that one saw their turning movements and flank attacks very clumsily executed. Bourbaki's troops were besides famished and worn out, thus their attacks were very deficient of French *élan*. How otherwise would it have been possible to maintain a line seven 'stunden' in extent with 40,000 men against 120,000? The German defensive was active, rather, if we may be allowed the expression, *reacting*. If the French succeeded in carrying a village, or any other point, they were sure to be turned out of it again in the night, or on the following day, by a counter-attack. So it happened at Héricourt, at Sevigny on August 31, at Champigny on December 2. It did not matter whether the brigade told off for the counter-stroke had fought all day long, or had made a several hours' march for the purpose from a distant part of the battle-field; the thing was ordered and it was done. Discipline accomplished this, yes, discipline; for let it not be thought, that the inspiring effects of first taking the field had in the masses survived the strain of a winter campaign with the hardships and privations of the bivouac.

As a peculiarity of the tedious warfare on the Loire, in the north of France, and on the Swiss frontier, we must also mention the frequent employment of siege and ship guns in entrenched positions. Both sides did this with good results; our people under Werder on the Lisaine, the French at Orléans; but almost all the French heavy guns were left behind in their works before Orléans on December 4. The French entrenched themselves with greater zeal in the latter part even than in the early part of the war, and in this they excelled. Much importance was attached by both sides to strengthening villages, and the events

of the latter part of the campaign refute the theory, that fights for localities[1] would no longer occur. They were, however, certainly of shorter duration, which we attribute to the offensive power of the breechloader.

To sum up the chief points remarkable in the tactics employed in 1870, we remark on the German side :—

1. The attack is directed on the enemy's flank, an assault on the centre following this, sooner or later.

2. In most cases, very powerful artillery fire to prepare the way.

3. Extensive employment of skirmishers.

4. Cavalry action restricted.

On the defensive, the Germans show generally skilful choice of ground, concentration of artillery, and a proper system of firing.

On the French side :—

1. A strict defensive, maintained against flank attacks.

2. Isolated counter-attacks without sufficient result.

3. Likewise very strong swarms of skirmishers.

4. Want of combination and of superior direction in the employment of artillery.

5. The cavalry behaves very well where it comes into play, but acts as if there was no such thing as a breechloader.

On the offensive :—in the first period, gallant, impetuous advances of great swarms of skirmishers, who shoot too much, and thus retard their own movements, often opening fire at absurd distances.

In the second period of the war :—bad officers and inability to manœuvre ; hence attacks unskilfully made and soon checked.

[1] The word 'localities' hardly expresses the meaning, in a military sense, of 'Oertlichkeiten' a word difficult to render. We understand it to mean certain points in a battle-field occupied by troops as specially capable of defence, such as a village, a detached building, a wood, a quarry, &c. &c.—TRANSLATOR.

IV.

CONDUCT OF THE DIFFERENT ARMS IN BATTLE.

INFANTRY.

THE German infantry moved under artillery fire often in double column of half-companies (Kolonne nach der Mitte) with full intervals, often only with 'rendezvous' intervals (thirty paces between battalions). It could do this without suffering great loss, because the accuracy of the French artillery fire was only moderate. This formation has undoubtedly considerable advantages in great battles, such as Wörth, Mars-la-Tour, Gravelotte, Sedan, &c., for it enables a commander to keep his masses in hand, and to move them with ease in any direction. The German infantry bore artillery fire uncommonly well. We are not going too far when we assert that the cases were rare indeed when the advance of our infantry was sensibly delayed by artillery fire. With the French the very opposite was the case. Both old and new troops stood our artillery fire badly. A very natural thing. In the first place, it is not compatible with the French temperament to endure without being able to act, and, in the next place, perfect discipline is necessary to make troops stand this test.

When a shell burst in the middle of a German battalion it closed its ranks again, and every soldier advanced instinctively, obeying the voice of his leader; but a French battalion would in the same case disperse, and some time was required to get it together again. On broken ground or amongst woods, company-columns with skirmishers were thrown out some way to

the front to guard against surprise; this was always done as soon as it was intended to engage the infantry. Half-battalions were rarely made use of in front line. Occasionally it happened that company-columns were formed at too great a distance from the enemy. This always resulted in less precision of movement, and increased the difficulties of command. When the attack was commenced in earnest, the first line of a brigade was almost always formed of company-columns side by side, rarely of two companies thrown forward, followed by the other half-battalion. The French, who extended very strong swarms of skirmishers, and threw out supports of from two to four companies at a considerable distance from them, opened their musketry fire at very long ranges, from 1,000 to 1,400 paces. It is true that even at this distance we had men killed and wounded, and that this surprised our people unpleasantly. It would be a mistake, however, to draw any positive conclusions from this. If you look into the matter closely, you will not find any case in which our troops were really shaken by fire at such distances. The advance of the German infantry was never once checked in this way. Our infantry generally extended at least one 'zug'[1] per company at once. This was, however, rarely sufficient when we came within effectual range of the Chassepot, about 500 paces. When at about 400 paces from the French skirmishers, our men were obliged to seek cover, or if it was level ground, to lie down and to answer the fire, for which purpose the skirmishers were usually reinforced by another 'zug' per company, if this had not already been done.

The intensely effective and continuous rolling fire of the Chassepot made it clear to all our commanders that a strong deployment of skirmishers was absolutely necessary, so as to

[1] A Prussian company when originally formed on parade is told off in two 'züge' or half-companies and stands in three ranks. Before entering into action, however, the whole of the third-rank men are formed into a separate 'zug' two deep, the remaining men of each half-company forming a 'zug' also two deep. Thus, in action there are three 'züge.' The one formed of the third-rank men is that usually first employed to skirmish. We prefer the English system as more simple.—TRANSLATOR.

answer the enemy's fire in a fitting manner, not to expose too strong supports to its effects, and at the same time to prepare the way for our attack. Our book of instructions prescribes to us to keep the supports *as near* the line of skirmishers as possible, so as to assist them quickly. This principle, which is still often a just one, was frequently converted into *as far from*, and we are ourselves inclined to favour the latter interpretation, that is, *so far from* the skirmishers as to avoid great loss, and yet near enough to support them at the right moment. The French fire was at times so murderous, that it was impossible to bring up detachments in close order near, that is to say, within 100 or 150 paces of the skirmishers, or to keep them in close order if they were there. There was, therefore, the choice of either keeping further back, or of extending your support.

The latter course was followed all the more frequently because the line of skirmishers soon required strengthening in different parts, and gaps caused by the enemy's fire required filling up. In broken ground affording more cover, it was often possible to bring the supports nearer to the skirmishers, but in moving up they frequently scattered in consequence of the necessarily cautious nature of their advance, partly extending and joining the skirmishers. What contributed to this was, that it was very difficult for officers to keep their men together, because the noise of a close conflict between breechloader and breechloader often so drowns the sound of the human voice that a great part of the men cannot hear the word of command, and the officer can only influence by his example and conduct; and this leads him also to the front even up to the line of skirmishers.

So it happened frequently that, soon after the beginning of an action, a whole regiment fought extended into a line of skirmishers, and that often the regiment in second line, if not already directed to incline to the right or to the left, was required to act as support to the first.

Meanwhile the German line of skirmishers was approaching the enemy by a succession of rushes. This was either done by

taking advantage of cover, or else they would advance about a hundred paces at a run, throw themselves down, and then run on again.

Much address was displayed in this manœuvre. Our careful training in taking advantage of ground here doubtless bore fruit; but also the feeling that the nearer you got with the needle-gun, the better it would be for you, had something to say to it. In this manner the line of skirmishers got part of it to within 400 paces, part to within from 150 to 300 paces of the enemy, according to the nature of the ground, seldom without suffering great and inevitable loss. This advance would occasion separate strokes and counter-strokes, which naturally caused the tide of battle to roll backward and forward. At this period the fight would attain its highest pitch of intensity. The fire of the breechloader on both sides resounded unceasingly, and the work of commanding became more and more difficult. (The distances which we here give are modified of course by the nature of the ground and other circumstances.) As a general rule the German infantry had their sharpest musketry fighting at from 500 to 150 paces, under peculiar circumstances even at closer quarters.

These were doubtless the right tactics and suited to the present arms, because one should use the offensive power of the needle-gun before attacking an enemy in position. An immediate rush against such a position, even if made by strong lines of skirmishers, would as a rule fail. Our adversaries had but little command over their men during the heat of an engagement, because French soldiers, though fine brave fellows, are less accustomed than are the Germans to strict and ready obedience and attention to orders.

By the time skirmishers approached, the French had already reinforced theirs and brought forward their supports. The latter however, as they came under close fire, would disperse to a much greater extent than did our men under similar circumstances,

and in this state of dispersion would get mixed up with the skirmishers.

Neither French nor Germans ever succeeded in bringing troops in close order into front line, in a fight such as that described, or in pushing battalions or companies forward to fire volleys.

As the absolute impossibility of this manœuvre, so much practised on the parade ground, was apparent to our generals, it was never attempted on the offensive, and when tried on the defensive generally failed. On both sides, therefore, the tactics of the drill ground and of peace manœuvres were completely altered as far as concerns the fire of the masses. The French made the greatest change in this respect, as they had tried to work with deployed battalions, but the Prussians also found it impossible to make the least use of company or section volleys when engaged with infantry.

(Sometimes the French made a practice of firing into the air at enormous distances. But, as soon as the skirmishers got to pretty close quarters, they gave this up.)

The cases in which volleys were fired in a downright infantry engagement would probably be easily reckoned. Failures should not count. The few cases in which volleys can be well authenticated, were when the French were surprised. Thus the 25th Regiment fired some very effective volleys at Villersexel by moonlight.

German detachments often were misled into assaulting the enemy's position at the first onset without properly preparing the way.[1]

These attempts hardly ever succeeded unless made with considerable superiority of numbers, but only increased the intermingling of troops.

If fresh detachments came up from the rear during a stationary musketry fight, whether to strengthen the line of fire or to make

[1] By fire.—TRANSLATOR.

an attack, it was necessary to double these up with the old skirmishers, because closing the latter to a flank was usually not to be thought of; thus men of many different battalions and regiments were intermingled.

On open, clear ground, such as for instance was in great part the case at Mars-la-Tour, companies and battalions were kept pretty well together (although perhaps in a long firing line, in general, without their own supports). But if the ground was broken (as for instance at Wörth) the intermingling and dispersing of tactical units was uncommonly great.

It seemed as if the whirl of fire and smoke, in which one is enveloped during infantry fights of the present day, had a dissolving effect. And evidently order could be least maintained where, instead of entire companies being employed as skirmishers, sections of different companies were jumbled up together.

It was now that the action of the flanking parties made itself felt. This betrayed itself by the slackening of the enemy's fire, and then the whole line at once rushed forward.

If a turning movement was impracticable, or if no effects from it were to be remarked, we moved on to the assault with what reinforcements had come up. Even in the charge, troops in close order played no considerable, we may say, only an indirect part. A dense line of skirmishers always preceded them, and how often it happened that during the forward movement they dissolved themselves, and ran on, to join the skirmishers so as to get at the enemy as soon as possible.

The French seldom stood an energetic charge with cheers and beat of drum if it was made in sufficient force. Bayonets were never once crossed in the open field, and but seldom in village or wood fights. The use of the bugle sound 'Advance' was found absolutely necessary, and had always a cheering effect.

The attacks were generally made with great determination when once in progress, for against the enormous effect of infantry

re, the greatest difficulty does not consist in charging home, ut in getting your people to leave cover to begin the attack.

Lastly, another thing sometimes happened. The French had red away all their ammunition, they could not be relieved, and o they gradually abandoned the position, without any direct ttack being made upon them. As soon as the Germans came p, the men would rush on impetuously, and would soon be riven back a bit by a counter attack of the French. They enerally, it must be said, rallied quickly, and went forward gain at the word of their officers. This disorderly forward ush, this undue precipitation, and, in like manner, this momentary, qually disorderly retreat, repeated themselves frequently, and rnish a decisive proof that something is wanting in our training o produce greater steadiness in battle. In such moments a bugle ound, or a good hearty cheer, from some one or other, had the est effect.

At such moments as these the German officer would sacrifice mself to set a good example; hence particularly arose the reat loss of officers.

The counter attacks of the French were made with their old nergy and in the old fashion, but what good could that do for n army which had adopted a completely defensive system of ctics, and which was also deficient in the power of manœuvring? t Wörth, Mars-la-Tour, and Gravelotte, there was a surging ackwards and forwards of the swarms of skirmishers on both des, such as probably the world never saw before on a battle-eld.

Two worthy antagonists were in conflict; two nations generally ndowed with gallant, warlike qualities, whose infantries had ways enjoyed great renown. If one adversary gained ground nd the other turned his back it was not for long, and the treating party exerted all its strength again to make head ainst the other.

But these frequent strong fluctuations of the fight cannot be one explained by the bravery of the contending races. They

are a characteristic feature of these great skirmishing battles; for infantry combats are now nothing more.

These fluctuations are caused by the surprise and sudden shock produced by the fire of the breechloader. For instance, if a detachment succeeds in flanking the enemy and in falling upon him somewhat by surprise, the rapid file fire suddenly opened produces such a powerful effect, that often the instinct of self-preservation affects the mass, and a rapid retreat takes place.

When the French army underwent total defeat, as at Wörth and Sedan, a discouragement set in which showed itself in surrenders, with wholesale throwing away and destruction of arms.

Thus after Wörth, still more after Sedan, the roads for miles round were so covered with Chassepots that one could hardly ride along them.

(This discouragement is of continual occurrence with the French. At Königgrätz, on the evening of the battle, perhaps more material was abandoned, but we never saw the Austrians throw away their arms in so wholesale a manner.)

Our infantry repulsed, without exception, all attacks of French cavalry, generally receiving them in lines of skirmishers, closed a little more than usual. So it happened at Wörth, where a brigade of cuirassiers attacked our skirmishers with great gallantry, and so at Sedan.

The charges at Floing by no means cleared the plateau of Prussian infantry, as some writers have alleged. They were almost all repelled by the skirmishers' fire.

German infantry many a time succeeded in taking guns and mitrailleuses under fire. Our skirmishers approached with great boldness, sought cover whence they could open fire on the batteries even at from 600 to 700 paces, and could kill the horses. This, however, generally took place when the French infantry was not in a position to protect the guns. The artillery of a defeated army must always at last beat a retreat. If this is not

done at the right moment the guns are lost, as soon as the enemy's infantry is able to open fire upon them at from 500 to 600 paces, and they are unable to beat off the attack by their own fire. They can't do this against the breechloader, and they could not even if they had a good sort of case-shot which they have not as yet. Naturally most guns are lost when the defeat is most decided. At Wörth the number was uncommonly large; whereas at Mars-la-Tour and Gravelotte, where the Germans carried the chief points of the enemy's position and gained ground in proportion, while at other points they retained possession of the battle-field, thus likewise fulfilling the conditions of victory, the number of captured guns was only seven, because the circumstances of time and place were not of a nature either strategically or tactically to produce a defeat like that of Wörth. The defensive tactics of the German infantry differed much from those of the French in the system of firing. The French sought to overwhelm the enemy with fire at long ranges, thereby causing them severe loss, but far from sufficient to stop their advance. Their fire at the shorter ranges, although deadly enough, was not so destructive as it might have been, because some of the skirmishers, when the Germans rushed forward, in the excitement of the moment kept on aiming too high, as if for the long distances, and thus many bullets passed over the enemy's first line. Besides which the French fired much less steadily and much more than the Germans. The German infantry when on the defensive did not open fire till the enemy was within 300, or at the outside 400, paces.

This practice, in itself judicious, is all the more so when your firearm is less excellent than that of your adversary. It was certainly often difficult to remain quiet under the enemy's rain of bullets. The young French soldiers particularly, who fought in the latter part of the war, opened fire at perfectly absurd ranges; but this fire naturally hurt us less when we were in position than when attacking, and our habit of allowing the enemy to approach much nearer, and of then commencing our

fire never failed to produce a wonderful effect. If we allowed ourselves to be misled by hurry and excitement into opening fire at long ranges, into popping away at a distance, the effect was in itself smaller, whilst the management of the fight and the command over the men became more difficult just in the crisis of the action. Even on our side hurry and excitement might often be noticed. A good many soldiers fired into the air at long distances, a good many fired into their friends in front of them, notwithstanding our careful musketry instruction; but if all was not as it should be with us (perhaps indeed there were many defects), yet things were much worse with the French, and when we followed out our principle of reserving our fire we always got the best of it.

(We believe that the army which takes to shooting at long ranges will have cause to rue this practice when opposed to a cool adversary.)

Even when on the defensive, to which, according to theory, volley firing is particularly applicable, it could so seldom be employed, that the few exceptions only serve to prove the rule. Even behind cover, field-works, barricades, the fire of dense clouds of skirmishers was preferred to bringing forward parties in close order to fire volleys. To fire a volley always requires a certain time, which will be made use of by the enemy's skirmishers to pour a heavy fire into the compact body then showing itself, causing serious losses, and in part hindering the volley. It may be objected that one often reads in the reports of good volleys being fired, the answer to which is that many volleys spoken of in reports were really never fired. There was the best intention of doing this every now and then, when on the defensive. Generally, however, the volley turned out an impotent abortion, an embryo, the effect of which was but slight. Infantry officers who have struggled for days in the bloody *mêlée* are the only trustworthy witnesses in this matter. In the positions prepared by us for infantry, field fortification was of course employed. This is a theme which we shall discuss more at large in a separate

chapter on the 'war of blockade.' We will only say at present, that the rifle pit is by far the simplest field-work, and that best suited to the tactics of the present day.

The fights for localities were of a different and much more desperate nature than in 1866. In the earlier war this sort of fight was on the whole of little consequence, except in a few instances, such as at Rosberitz. The Prussians attacked the villages cleverly and with a turning movement; the Austrians showed themselves often unskilful in the defence. It was different with the French. The natural handiness of the individual well qualifies them for this style of fighting. The very first action of the war furnished instances of serious fights for localities, at Weissenburg itself and on the Geisberg. Later, in the battles near Paris and on the Loire, local fights were unusually frequent, and the opinion which we protested against in 1869 that this sort of fighting would be avoided and that it would rarely take place, because one would seek open ground for the breechloader, was completely and practically refuted. These fights for localities happened necessarily often because skirmishing tactics attained a greater development in this war than they had ever done before, which tactics entail the necessity of taking every advantage of accidents of ground, great and small. In order to get the full value out of the breechloader, each army was led to place great importance in the occupation of the borders of woods and villages, which was doubtless right.

In the combats fought with varying success in villages one may remark that, since the introduction of the breechloader, both parties are more shy at leaving cover, whether to make an attack or to clear out of a building and retire. Hence the musketry fight lasts longer on certain points, and there is a greater dispersion of the troops engaged. Again, one party leaves a building more hastily so as not to have its retreat cut off by the enemy's fire. As soon as the outskirts of the village are lost the breechloader comes into play inside, and so a general village fight is perhaps of somewhat shorter duration than in the wars

from 1813 to 1815, although the fights at Le Bourget, Châteaudun, and many other places lasted a long time. In this sort of work the less thoroughly trained Frenchman showed himself quite a match in quickness and intelligence for the well-trained German; but the German officer proved himself quite superior to the French officer in handling his men, though at times he would have no opportunity of controlling them, and this superiority of the officer gave the Germans the advantage in this sort of fight as well as in others. The German infantry knows how to adapt itself quickly and safely to all possible positions, because it not only manœuvres on sound principles, but because it is accustomed to act according to the circumstances and situation of the moment. Its principles are: to go forward, but at the same time to make the most of its fire; to take advantage of the ground; to avoid the enemy's front; to seek his flank. One can recognize the striving after these things in spite of the dispersion of the battalions fighting in first line (as is particularly the case in wooded or broken ground), in spite of the battle raging wildly to and fro when the officer can only influence his men by personal example.

The conduct of the German, particularly of the Prussian regiments, was almost everywhere alike. This similarity of regiments from the different provinces, particularly in their mode of fighting, is a remarkable characteristic of the present Prussian army. There is no difference with regard to training and tactics. The 'Jäger' battalions form an exception. This arm had received after 1866 a different sort of instruction.

The main principles upon which their old drill was founded were: the Jäger are formed of valuable materials, and excel in shooting. They should therefore only be employed for special purposes, particularly of a defensive character. This idea regulated their training.

But our wars of 1864 and 1866 were fortunately offensive. The consequence of this was that when the Jäger adhered to

regulations they had very little to do, to the great discontent of these brave fellows, both officers and men.

The system of instruction was therefore altered, the same rules were applied to the Jäger as to the rest, at the same time that they continued to receive more complete instruction in the use of the rifle.

As orders are always obeyed in the Prussian army, so this change was carried out. We therefore saw the Jäger-battalions, which are really composed of material with a higher average of intelligence and physique, brought to the front like all other infantry from the very beginning of the war. Indeed the 5th Jäger-battalion at once took the liberty of performing a brilliant act of offence, and of taking the very first French gun. In most actions of this war the Jäger were used just like ordinary infantry. They advanced to the attack, suffered severe losses, and perhaps their fire was in some cases more telling than that of the line battalions, although this was hard to prove in the great battles where mostly the fire of the masses is decisive. They found employment suited to their superior skill with the rifle in the lines of investment round Paris and Metz. It was the custom there to attach some Jäger to every picket as patrol leaders, and to occupy certain points exclusively with Jäger so as to receive the enemy with a more telling fire.

The effect of their fire is certainly still somewhat greater in the field than that of the line battalions, but the relative importance of the arm is much reduced since the introduction of breechloaders; and, if we do not intend to deny their special utility for certain defensive purposes and for particular situations in battle, we still think it allowable to ask whether their utility is so great as to justify the concentration of such excellent materials in one battalion per army corps.

Nevertheless the German Jäger represents, what no other arm does, a piece of German national life, a German peculiarity, German steadiness and skill in the use of fire-arms; and if we can prove that these corps are now and then of practical use,

the propriety of maintaining them is established. Their place is on

Patrol duty,
Advance guards,
Battery escorts,
Detached enterprises.

To sum up the characteristic points of the infantry battle-tactics of 1870–71, it will be necessary in doing so to mention in the first place what we did *not* see.

That is to say, *no* volleys in battle; *no*, or at least very few, attacks by troops in close order; if however a compact body ever did attack, it was always a small one, never amounting to a battalion column. But we *did* see—

Great deployments of skirmishers on both sides; long-continued, gradually advancing musketry fights, often rolling backwards and forwards; at last, the flank of one party turned or else one side exhausted; the other side pressing on in consequence, or a rush of dense clouds of skirmishers who endeavour at any price to dislodge their opponents; not forgetful that, in case of failure and retreat, they are dead men.

On both sides great dispersion; intermingling of troops, particularly in broken ground: hence the leader's control diminished.

With the Germans—more steadiness, and the habit of reserving their fire;

With the French—more hurry, and the habit of firing at long ranges.

CAVALRY.

If, after 1866, opinions were much divided upon the importance which should be attached to this arm now-a-days, this will be the case to a much greater extent after 1870. At first sight it may appear that those who deny the utility of great cavalry masses in a pitched battle, and the possibility of their attacking infantry armed with breechloaders, will be silenced by the very great services which our cavalry rendered in the French war;

but we forget easily that safe conclusions can only be drawn from the total sum of experiences, and that, when successes are obtained, we are apt to overvalue them all the more from their having before appeared doubtful. Above all it becomes us here to steer clear of undue bias, not to allow ourselves to be influenced by partiality or affection for our own arm, and to examine the question merely as tacticians, without reference to the service to which we belong. One may think this an easy matter. Yet it is not so. Those feelings will enter here and there into the question. For the successes of our own arm in which we have shared, the gorgeous picture of detail which is before our eyes, only too often make us forget the whole grand panorama of war which is made up of hundreds of such pictures.

The experience of the campaign of 1866, in which the cavalry corps and divisions did on the whole so little, and followed during a considerable part of the war almost always at the tail of the army, caused people to doubt the expediency of forming these corps and divisions.

And we ourselves belong to those who advocated the organization of cavalry in smaller bodies, by attaching some to the infantry, and by forming independent brigades, which would not prevent concentration for specific purposes. The authorities took a middle course by forming no cavalry corps but moderately strong divisions with the idea of their acting independently as much as possible. This organization has answered perfectly, particularly as these divisions were employed in a manner which proves that the way in which cavalry may still be made important and effective had been rightly estimated.

In 1866 two equally strong and good cavalries were opposed to one another. Cavalry then played a greater part in battle than in 1870, if we take into consideration the much shorter duration of the war and the smaller number of actions. Collisions between the two cavalries were of frequent occurrence, whilst in 1870 we hear little of great cavalry fights man to man. This proves that the French cavalry did not feel itself a match

for the German horsemen, or that being less well-drilled it did not succeed in deploying quickly enough.

In 1866 we saw in some cases Prussian horsemen succeed in riding down Austrian infantry and taking guns. We find exactly the same things happen in 1870, although the French infantry was armed with the chassepot. The possibility of success against infantry thus armed is thereby proved, and will scarcely be denied by anyone who has a right idea of the vicissitudes of a hard fought battle.

But it should be asked how many such cases can you count? Are they on the whole in proportion to the number of actions, and to the importance attributed to them by some; and, lastly, were those successes always complete, that is to say, were they not very momentary, and did they exert any important influence upon the issue of the battles, or of the war as a whole?

To this we must answer, that the instances of successful cavalry attacks on French infantry are few. They are confined to one single charge of importance against the old imperial infantry, and to three or four against the hastily improvised infantry of the third republic.

The principal action and the greatest success of German cavalry in the whole war was at Mars-la-Tour on August 16. This day is unexampled for cavalry in modern military history.

Neither the Crimean war, nor the wars of 1859 or 1866, can show anything to compare with it, although there were some great cavalry charges in those campaigns.

At Custozza the Austrian cavalry attacked with great bravery the divisions Bixio and Humberto; it rode through the intervals, but did not break a square.

The nearest approach to the charge at Mars-la-Tour was that of the English brigade Cardigan at Balaclava in 1854; but these things were on a much smaller scale, and at Balaclava the sacrifice was useless, whilst at Mars-la-Tour it was completely justified.

Let us examine the state of affairs in the latter battle, otherwise called Vionville.

The 3rd Army Corps had fought since 9 A.M. against threefold numbers, and closed the road to Verdun along which Bazaine's army was retreating. The infantry fight was raging in the manner already described. About one o'clock both the strength and the cartridges of the brave men of Brandenburg began to fail, when an attack of several cavalry regiments, ordered between one and two o'clock, gave them breathing time.

The ground on which this attack took place is chiefly flat, therefore favourable to cavalry. The French first line was like ours extended into a long line of skirmishers. As a scarcity of ammunition had already shown itself with the 3rd Corps, it is probable that the enemy was no better off.

Several brigades charging on various points at full gallop, and with the most reckless bravery, overwhelmed the first line; then coming upon the supports broke several battalions, rode through several batteries, were at length repulsed by the masses which they encountered much further on, and being attacked by French cavalry retired under a fearful fire.[1] Some of the regiments had indeed sounded the rally before coming upon the third line. A similar attack was made some hours later. Now was this a success? Certainly it was; the French surprised by the impetuous onset of the German horsemen pause in their advance; time is gained; the German reinforcements, which eventually decide the victory, come into line.

The charge at Mars-la-Tour was doubtless an exquisite stroke of higher tactics on the part of the general who gave the order, and a brilliant feat of arms on the part of the cavalry brigades

[1] An Englishman, when reading the above, cannot fail to remember with pride the gallant act of the 15th light Dragoons (now Hussars) who, on April 24, 1794, charged enormously superior numbers of all arms, in company with the Austrian Leopold Hussars, for the purpose of saving the Emperor of Austria from capture. At Villers en-Cauchie as at Mars-la-Tour the object in view justified what otherwise would have been a useless sacrifice, and in both cases the object was attained. — TRANSLATOR.

which executed it. The attack had a great effect upon the fate of the day. Our cavalry sacrificed a third, some regiments indeed half their men to bring the French to a stand-still. But here lies the difference between this charge and the great cavalry attacks of former days, that the latter themselves decided the victory.

The gap which had been made in the French line was closed up again, and the effect could not be called immediately decisive. The number of prisoners was small, and our loss probably greater than that of the French. Good cavalry may ride over infantry, but will find it difficult to annihilate.

In order to do complete justice to all, let us suppose the following situation. Imagine the 3rd Corps not to have been alone at Mars-la-Tour, but four or five German corps to have been in action; that the battle remained undecided at one o'clock, and that the two cavalry divisions had been launched at the enemy, as they really were on August 16. Can it be thought that such an attack would have decided the victory? We do not believe it; for the cavalry must necessarily, as it did at Mars-la-Tour, have retired some distance to rally under cover from the awful fire. This would of itself impede the advance of our infantry, through which alone it was possible to reap the fruits of the success gained by the cavalry, and the time would have passed by for doing this. But take the circumstances as you will, such a case will always be very exceptional in the present state of warfare, as was actually in the late campaign the great charge of Mars-la-Tour with its undoubted success. It was the only occasion on which cavalry was employed against infantry on a large scale in a pitched battle. At Gravelotte the whole cavalry, French and German, was kept together behind the line of battle without being able to act. (The only exception was the Fourth Lancer Regiment, which was sent forward with two horse batteries through the defile of Gravelotte, and suffered enormously by the French fire. And an attack was really here out of the question.) It was the same at Spicheren and Weissenburg. At Wörth and Sedan French de-

tachments of the strength of brigades, regiments, and squadrons attacked most unsuccessfully.

It remains to mention the German cavalry attacks at Amiens, Orléans, and in various other battles, in which attacks all three arms took part. We find here several successes against infantry, but particularly against artillery. In the battle of Amiens some German squadrons rode down a battalion of Marines and took several guns.

At Orléans the Fourth Hussars got at a battery and carried it off.

At Loigny, on December 3, a squadron of the Eleventh Lancers made an attack from a distance of 1,500 paces on a French battery then moving along a by-road. The infantry escort took to flight, the battery tried to come into action, but did not fire, and was carried off. And there were several minor feats of arms of this nature, in which the German horsemen showed that they were thoroughly imbued with the true cavalry spirit, that they understood how to make use of an opportunity, and that their training enabled them to make the boldest strokes, and at any rate to attempt everything.

But all these advantages, gained as they were actually on the battlefield, however favourably they may have influenced the momentary state of things; these deeds, which were greatly praised in reports, and with justice when you consider the perfection of firearms, cannot even when viewed in the most favourable light be considered proportionate to a mass of 70,000 horsemen, in which strength the German cavalry took the field. And in estimating the value of these troops, we must take into consideration their cost, which exceeds that of three times the number of infantry.

We must further bear in mind that the Chassepot had only been in the hands of the French infantry since 1868, that many reserve men had never handled it before the war, and that a bad system of firing had been adopted by the French. All this may be very different next time.

At Langensalza the excellent Hanoverian cavalry did not succeed in breaking the half battalions of the 1st Battalion, 11th Regiment mixed up with stragglers, though tired by four hours' unsuccessful fighting, and on the retreat. It is only fair to mention, after recording the brilliant feats of our cavalry—if one wishes, on account of the general good, not to form an opinion in favour of a special arm—that twenty-five cavalry regiments suffered only a trifling loss ; whence it is evident, that in their case, though it may not apply to all the cavalry, there was but little opportunity of coming into action. We must here also notice the passive attitude of the cavalry at Beaune-la-Rolande. This battlefield is on a plain, therefore suitable for cavalry, yet it could not act. Our people would certainly have taken advantage of any opportunity ; but the fire of the infantry masses hindered them.

Our cavalry charges both in the French and Austrian wars were made in the formation, which offers the best possible chances, either by squadrons or by echelons, which attempt to break the infantry by a succession of blows following one another rapidly.

But even these tactics will probably not nearly compensate for the enormous superiority of the breechloader when in the hands of a brave and *well-trained*, infantry ; not *recruits*, like the French 'mobiles' and mobilized national guards.

After having thus examined the operations of our cavalry on the actual field of battle, we will turn to their much more important employment on outpost and reconnoitring duties, and in the movements and precautions by which the cavalry divisions covered our army and its marches as with a veil.

Even before crossing the frontier the cavalry divisions in the centre of the army were pushed to the front.

At the first entry into France they came upon the enemy, at Spicheren, at Weissenburg, and at Wörth.

Immediately after these actions the cavalry divisions again led the way. Their mission was above all to pursue and keep in contact with the enemy. They threw forward strong detachments

which everywhere forced the enemy back, and sought to discover the direction of his march or his new position. If they found the way clear before them, they sent on officers' patrols, with orders to push forward at any risk until they came upon the foe. These parties were despatched in all directions, and performed their duties generally with equal ability and determination. It is they who spread the fear of 'les Prussiens' many miles in front of the army corps' advance guards; to them cities like Nancy opened their gates without an attempt at resistance; and if here and there a cavalry patrol some days' march in advance of the division was dispersed or cut off, one or two horsemen generally made their way back to give intelligence which was what was wanted.

Every one has heard of the terror inspired by our Lancers ('Uhlans') in France. Since the Hussars of Frederick the Great, no cavalry had gained such renown amongst the enemy, and the Prussian cavalry scouts always went by the name of 'les Uhlans' amongst the French, even if they were Dragoons or Hussars. Requisitions and foraging excursions were made to great distances, magazines were destroyed, railways and roads rendered impassable, telegraph wires cut, in one word, the communication of the French armies rendered insecure.

The enemy's cavalry was, on the contrary, very inactive. The French generals did not appear to understand the employment of cavalry after the German fashion; or was it that they did not consider their cavalry a match for ours, seeing that they did not dare to oppose it to ours? And even when the cavalry did show, it did not display anything approaching to the spirit of enterprise, and to the valour with which our German horsemen were inspired. Perhaps the defeats of Wörth and Spicheren at the very commencement of the war contributed to this.

As an additional result of the use to which our cavalry was put, we may mention the perfect security and tranquillity enjoyed by our army corps on the march and in camp, in rear of the cavalry divisions pushed forward half or a whole day's march to the front. The army corps had not, as a rule, to

trouble themselves with outpost duty, but only to provide for the immediate security of the bivouac or cantonment. The infantry was therefore relieved of much hard work, being in great measure exempt from the wearisome and harassing picket duty.

The cavalry divisions were kept in advance as long as possible, and were often only withdrawn at the moment we advanced to the attack on the day of battle, if the ground appeared too unfavourable for horses. Before Sedan our cavalry divisions were close to the enemy, and prevented him from getting certain intelligence of our movements. Under cover of these same divisions, the operation of surrounding the French was partly accomplished ; and the German commanders would hardly have got information at the right time of MacMahon's departure from Rheims and Châlons, had our cavalry masses not been pushed far to the front.

In the second period of the war, after the almost total destruction of the French cavalry, the superiority of the Germans in this arm became naturally more prominent.

In the tiresome campaign on the Loire, the cavalry divisions lay for weeks in front of the enemy, so as to ensure some rest to the infantry much exhausted by the numerous sanguinary fights. The cavalry patrols worked in very broken ground with that steadiness and determination, for which the French so often expressed their admiration, as, notwithstanding their vanity, they still retained a spark of justice. And how much was our cavalry harassed by the bands of Franctireurs, fully organized after October, and carrying on a dangerous guerilla warfare in the country about the Loire and to the north of it ; how many heavy unmerited losses did it endure! Yet it wearied not. It was, however, often quite necessary to attach infantry to it to hold small posts, or to enable it to cross certain tracts of country.

Thus the cavalry covered the army corps in rear of it, made requisitions, harassed and reconnoitred the enemy. In

those respects it rendered great services to the army, services which far surpassed its performances on the field of battle. We are now describing its most important field of operations, and in this way the German cavalry did all that could be expected of it. But the idea of great bodies of cavalry acting independently in working round the enemy's flanks, and exercising a decisive influence upon the general result of the war, has not been realised. To attain this end the action of cavalry in battle must be of a much more extended nature than it is. A single infantry detachment is able to stop a strong force of cavalry in broken ground.

The activity of our cavalry divisions was also displayed in the complete manner in which they performed the outpost duty and covered the corps behind them (in doing this they were in the position of strong advance guards pushed far forward); again, in keeping the country in subjection by small detached parties; lastly, by threatening the enemy's flanks.

In the forays and encounters which resulted from them on the Loire, in Brittany, &c., our cavalry was often met by dismounted French horsemen armed with the Chassepot, whose fire absolutely stopped the advance of our men. Lancers could not act at all effectively against these fellows on broken ground. Hussars and dragoons had to go back and dismount, and thus fights took place on foot for the possession of certain localities, sometimes even against French infantry, and often ended with the victory of our light horsemen.

The lancers, in consequence of these circumstances, did their best to arm themselves with Chassepots, for even the needle-carbines of our hussars and dragoons were, according to our officers, not up to the mark. According to all those who took part in these affairs, it is desirable to arm our cavalry with a long-range carbine. The idea of making cavalry available for fighting on foot has already often been advocated by many authorities. The Emperor NICHOLAS had a corps of dragoons.

The question is simply that of enabling cavalry at need to overcome the resistance of riflemen in small numbers.

Is cavalry not at a disadvantage if opposed to one armed with long-range carbines, without having a similar advantage? We must answer, it is. The old argument in reply to this was that the possession of firearms is prejudicial to the *morale* of cavalry, who should rely on their sabres alone. In all such sayings there is a certain amount of truth. There is no greater mistake, however, than to make such an argument applicable to all eternity. The one in question was quite fair as long as one had only smooth-bore carbines or pistols, of which it may be said that it did not much matter whether they were fired or not. But it no longer applies, since the introduction of breechloading rifles. The *morale* of cavalry will not be affected *if lancers are properly instructed as to the use of these arms.* We have done much more difficult things than this of late. We think that an improved needle-carbine should be issued to the light cavalry and to one section per squadron of lancers and cuirassiers.

Some have advocated the organization of light mounted infantry for 'la petite guerre.' We ourselves supported this measure before we had the experience of 1870. Now we must oppose it. The opportunities for making use of firearms in the French war were so numerous, that a large number of mounted infantry regiments would have been wanted to meet such requirements. But if you form enough corps of this description to be able to detach them everywhere and to employ them in separate expeditions, you end by creating a new arm of the service which in many other situations would be of no use; it would therefore be better to give light cavalry the power of taking care of itself in some measure, under all circumstances, when detached.

The above-mentioned services rendered by our cavalry on picket, in reconnoissances, and as advance guards, are undeniable.

Nevertheless, there was not at all periods of the war a sufficient field of operations for so strong a force of cavalry as

we had. A comparison of the numbers actively employed with those having at times but little to do will demonstrate this.

During the blockades of Metz and Paris, from September 1 to November 15, we had several cavalry divisions before those giant strongholds. They certainly made excursions into the environs to forage and to disperse bands of Franctireurs and such like, but this was still no sufficient occupation for so large a body of fighting men. The experiment was made at Metz of employing cavalry on picket duty, but it was soon given up, and was confined to attaching orderlies to the infantry pickets. Before Paris, peculiar circumstances, amongst others the continual fire from the forts, rendered the employment of cavalry outposts very difficult from the first. It is evident that one entire additional infantry division behind the very thin line of investment, disposed so as to act in reserve, or, at need, to relieve the corps in first line, would have been of much greater value than the cavalry divisions which could be of no direct use for carrying on the siege. Let us examine the situation in the beginning of November. An army of from 80,000 to 100,000 men under Aurelle de Paladines is advancing; it occupies Orléans and forces Tann at Coulmiers to retreat. Metz had already fallen, on October 28, but Prince Frederick Charles is not yet up. The position is not without danger. If a serious check of the weak German divisions opposed to Aurelle de Paladines, and in consequence an advance of the Loire army against the southern portion of our line of investment, need not be looked upon as an irremediable misfortune, they must necessarily much delay our operations. Perhaps the war may be prolonged by half a year. This is a very *possible* event. But it would be *impossible* if, instead of the cavalry divisions pushed forward to the south-west of the blockading army, we had two infantry divisions. It may be answered; you cannot adapt the proportions of the different arms to all the possible situations of war, and it is useless to attempt providing for all probabilities. The first part

is true. But before all things we must consider carefully what is likely to be, with few exceptions, the normal state of things.

In all sorts of warfare, infantry is the arm to which must be assigned unqualified utility in battle and applicability to every kind of country. With regard to the latter part of the argument—the estimate of probabilities—if it does not take you into the clouds, it will always be an instructive study. And in supposing a decided advance of Aurelle de Paladines, we have taken no count of the possibility of the defence of Metz having been protracted for a fortnight longer. Take the position as it actually was in the beginning of November, and it cannot be denied that a reinforcement of infantry in the west would have insured us against any check. Half our cavalry, had it been there, could not have done as much for us.

We draw the following conclusion from these considerations: our cavalry was too strong, and we estimate the excess at about a quarter. The other three-quarters, well and boldly led, would have sufficed to do all that cavalry did accomplish in the French war.

ARTILLERY.

Seldom has an arm taken more to heart the lessons of a war, or made better use of its experiences than has the Prussian artillery since 1866. But the superior officers had adopted fresh ideas as to its proper use, and the principles which enable this arm to take an important part had been determined. Had our artillery in 1866 not failed so often it would not in 1870 have taken that brilliant part in battle which made as near an approach to the splendid artillery feats in the time of Napoleon I., as under present altered circumstances is possible.

That a better and more active employment of artillery was contemplated was evident at the very beginning of the war from its distribution in the 'Ordre de bataille.' The advance guards were better provided with artillery, the 'corps' (no longer 'reserve') artillery followed at the head of the main body. After

the changes noted by us in Chapter I., there could be little doubt that the artillery would behave very differently to what it did in 1866.

Three principal features may be recognized in the artillery tactics of 1870.

1. The batteries approach to within easy distance of the enemy, and do not blaze away at enormous ranges.

2. They engage in sufficient force in advance guard actions.

3. They concentrate into masses and cannonade the enemy's position, preparing the way for the infantry which follows.

4. They have got rid of the prejudice that the loss of guns must be avoided at any price.

We have already described the general conduct and employment of the artillery.

The artillery-secret had again been discovered.

The arm had become conscious of its strength.

Hence we see the deployment of great masses with unity of command. The placing and forming of such lines of guns are amongst the most difficult things in the tactics of the three arms. What difficulties are often presented by the ground, and how seldom have commanding officers the time to reconnoitre it thoroughly before ordering up their batteries! The question is not only to take position, but also to choose one whence the enemy can be effectively cannonaded. They must further provide for the possible advance of the line either in echelon or by batteries, and lastly for a retreat. If, however, artillery wishes to cover effectively the advance and deployment of the infantry masses, and to render their attack possible in the shortest time, it will often find it necessary to go very much to the front, and perhaps to come into action very badly protected against an attack of the enemy. Great boldness and self-reliance are required for this. Our artillery performed their tasks in most of the actions with astonishing certainty. The incontestable superiority of its 'materiel' was here a great advantage to it. In the combats of advance guards and of battery against battery

one was almost sure to notice this. (At Wörth a Prussian advance guard battery engaged a French one early in the morning at 3,000 paces. A second French battery tried to enfilade the Prussian battery, coming up at an angle to the first, but, receiving three well-directed shells one after the other from the Prussian flank guns, limbered up and disappeared.) Often French batteries had to retire after a very short fight. And our battery officers showed a decided superiority in the selection of positions. We assert that the officers of the French artillery, which is reputed to be their best arm, did much less tactically both in general and in detail than did the Austrians of 1866, whose conduct one could not but admire. Whilst the most unpractised eye would remark the systematic deployment of division and corps artillery on the part of the Germans, one could not fail to notice amongst the French an absence of combination on the part of their artillery in most of the actions. This want of good artillery management was particularly noticeable in the first part of the war; during the second period, in the battles near Orléans; also at Belfort and before Paris, there is less reason to blame their system of tactics, as far as we can judge from accounts hitherto given, but at that period the defective state of instruction in those hastily raised batteries was greatly to their disadvantage.

The German artillery was not, on the whole, so much stronger than the French in proportion to the other arms, though we find this now and then asserted. The latter was in a position to bring very considerable masses against us, but the right tactical idea was wanting, as well as practice in deployment and in the execution of the necessary manœuvres.

The German artillery formed its lines with ease. The good drill of the men and the ability of the officers were very remarkable. One recognised the fruit of long, hard study on the part of the officer, combined with the experience gained in 1866.

It was a grand inspiriting spectacle to see the German batteries overcome all obstacles, form their line, and open fire.

After allowing this a short time to work, and one had not to wait long for the effect to show itself, the long line broke into sections, each of which advanced in turn towards the enemy's positions.

At Wörth all the artillery of the ~~3rd~~ 5th Corps deployed into line, and was joined by a great part of the batteries of the 11th Corps. At Sedan the artillery of the same two corps was soon in position, notwithstanding the difficulties of the ground, and pushed forward so far opposite the plateaux of Floing and Issy, that it deployed even in front of the advance guards.

The artillery had surrounded the enemy's position on that side before the infantry came up.

The artillery of the other corps was posted in a similar manner, so that an enormous circle of guns enclosed the French army.

Sedan seems to have been the greatest artillery battle of the war. The effects of the fire were awful, as proved by 10,000 dead and 20,000 wounded on the French side.

The French, who endeavoured to advance their infantry against those masses of artillery at different points, were brought to a stand-still over and over again, generally at about 2,000 paces. We may produce just as many facts to prove the manœuvring powers of our artillery at Gravelotte; later at Metz, before Paris, and at Orléans, at all which places it adhered to the same system of tactics.

At Verneville, during the battle of Gravelotte, the artillery of the 9th Corps placed itself in an uncommonly exposed situation in front of the line of infantry, and maintained itself there throughout the whole day. The infantry took good care of it, and secured it against the loss of guns. The batteries of the 8th Corps and of the 1st Cavalry Division took up a similar exposed position on August 18, in front of the defile of Gravelotte. The Guard, 12th, 3rd, and 10th German Corps deployed at last nearly 300 guns against St. Privat. Our artillery excelled just as much in reaching and arming positions which had been carried.

Whenever the infantry had taken a position and wished to push on further, or to hold its ground, it found itself soon supported by the artillery, which, unlike that of 1866, was not shy of venturing under rifle-fire, so as to be ready to take part in the fight at the right moment.

We have already mentioned the effect produced on the French infantry by our shells, which almost always burst. Moreover our field batteries did not even fear, when it was necessary, to engage garrison and marine artillery, as often happened before Paris and Metz.

The much talked of and mysterious mitrailleuse was encountered by our field-gun most effectually. As soon as a mitrailleuse opened fire, our artillery directed their fire upon it, and generally forced it to retire. There can be no doubt as to the effect, or rather want of effect, of the mitrailleuse. This machine is supposed to fire what answers to good case-shot and at the longer ranges. Of itself a contradiction! All case-shot must be fired at such a range that one may see its effect clearly, that is to say, mark the men fall and the battalion waver. At long ranges this is difficult when small bullets are used, because one never sees whether or how one has missed, whether one has fired too high or too low. Hence it is hardly possible to correct an error. With the French mitrailleuse the radius of dispersion of the bullets is so small, that the chance of a hit is reduced to a minimum. In what a helpless position then was this sort of half-gun when opposed to an artillery which could regulate its firing with such precision by the elevator. The mitrailleuse was on no occasion able to answer the fire of our artillery with effect. This mongrel arm possesses neither the advantage of infantry in being able to get under cover and to move rapidly, nor the power or range of artillery.

Nor could it defend itself against skirmishers who were as dangerous to it as to the field-gun. Even a battery of smooth bores, which can alone fire good case-shot, would be unfit to cope with skirmishers, and would succumb to their fire at ranges short

of 800 paces. The age of effective case-shot is passed. This projectile can only effect something when one is able to use it at such short distances that with a good radius of dispersion it must tell, and thus the effect of the shot need not be observed. But infantry, armed and handled as they are now, make it impossible for artillery to come into action, or to maintain itself at these short ranges. But even if a mitrailleuse were invented which had the advantage of a good radius of dispersion at the longer ranges, its effect would still be comparatively small, as the difficulty of judging the distances and of correcting the aim at the long ranges would remain the same. We therefore look upon mitrailleuse batteries in the field, whether they be like those of the French, or of an improved description, as very inferior engines of war.

The mitrailleuse was intended to surprise us; a thorough offspring of the aspirations of Young France with a fair exterior; but it failed in its effect on an army which would not be frightened, and only thought of getting at the enemy.

That the mitrailleuse can and never will have any effect upon troops under cover is evident.

When on the defensive, the German artillery in like manner acted upon the principles of massing guns as much as possible, and of not firing at too long ranges. When the French infantry came forward, our guns aimed at this alone, and held its own against it, depending on its own power of resistance as well as on the German infantry. On the Loire, Prussian guns were captured by the French and retaken by our infantry.

If we take a general view of the artillery part of the campaign, we see that the Prussian breechloading system gained the victory not only over the French but also over those who attacked it after 1866. These attacks were strengthened by the partial failure of our artillery in 1866. Many people did not reflect that this very failure was to be attributed to the incomplete provision of rifle guns as well as to defective tactics and to the improper mode of using artillery. The French war has proved

that the breechloader's accuracy of fire was not too highly estimated, and that it could be maintained not only on the practice ground but amidst the din of battle. That for the sake of this great range and accuracy which enable us to pitch shells with precision into the enemy's ranks, we may well sacrifice the advantage of firing case-shot, which have, as we have shown, lost their terrors for infantry, appears to us evident.

We have never had any doubts about the value of our system in Prussia, but elsewhere the plausible arguments brought against it produced doubts in a measure perhaps inspired by party feeling. But certainly a system like the Prussian can only be successful when the material is in the hands of officers who combine German thoroughness in the study of their art with that fine soldierlike spirit which alone enables men to use their science in the field as a deadly weapon against the enemy.

We have described the tactics of the three arms as we became acquainted with them through reports and by personal observation.

A few words upon their combined action.

We remark on the German side that they always supported one another fairly, and sometimes in the most exemplary manner.

The reason this was so is, that every officer gains a knowledge of the tactics of the three arms during his carefully conducted theoretical studies, also that we had the advantage of previous experience in war. The French were wanting in both ways. Their line officers undergo no scientific examination in military matters ; their peace manœuvres are still always arranged according to programme, and are not calculated to give a good idea of the combined action of the three arms ; and, lastly, it was no business of the officers generally to reflect upon former experiences ; at the best this was the privilege of a few.

The saying of Frederick the Great, 'What is the good of experience if you don't reflect ?' again verified itself.

Infantry has hitherto been universally looked upon as the arm which decides battles.

It maintained this character in 1870.

However great the effect of artillery, however enormous the losses of the French by our shells, there was still no example of a really great result being due specially to artillery.

Even the plateau of Floing, which was cannonaded from all sides, had to be stormed by infantry. And the same may be said of St. Privat. Single villages were set fire to by shells, as for instance Noisseville, on September 1, and were in consequence evacuated by the French, but it cannot be said of such places that they were of primary importance. Almost always it was found necessary at last to wrest these positions from the enemy by means of infantry. The opinion expressed before the last war in the well known publication 'Taktische Rückblicke auf 1866,' that victory would be decided in favour of that army which knew best how to use artillery, and which had the preponderance in that arm, has not been substantiated. Artillery prepared the way for attack, took its part in carrying on the fight, but infantry gave the decisive stroke as in previous wars. We hear the French talk a great deal of victories having been gained by the German artillery—mere gossip, which serves to console them for their defeats.

It is true that our artillery was able several times by itself to stop the attacks of the French; but this is only a proof of inferiority on the part of their troops, and in such cases there was no question of a decisive result from their repulse.

The action of cavalry in battle is and continues to be secondary. When it was engaged it was generally in support of infantry, and its attack being ordered at the right moment was quickly and vigorously executed.

The wars of 1859 and 1866 had shown us little besides infantry fights, the assistance given by artillery being in general insufficient.

In 1870, the action of artillery on the German side again

nearly equalled what it was during the 'wars of liberation,' and the other Napoleonic campaigns, in which, however, infantry did most of the work, notwithstanding the intelligence and determination displayed by the artillery.

We have now a few remarks to make upon our losses. They were serious; several conclusions may be drawn from their extent in various cases. An important success is not always accompanied by a great loss, nor is the merit of a feat of arms to be estimated by the number of slain. But in general you may judge by the loss whether the fight has been well or ill contested. You must again distinguish between an action where one side is under cover or behind works, and a stand-up fight in the open.

As a general rule, offensive tactics cost both sides more men than defensive tactics.

In considering the losses of the French we must remember that they were beaten, and therefore, when retreating under the murderous fire of our breechloading guns and rifles, suffered losses which we escaped; but, whilst in the actual occupation of their positions, they suffered less than did the Germans in attacking them.

The loss of the 3rd Army at Wörth amounted to about 9,000 men.

Thus the 46th Regiment lost from 750 to 800 men; the 1st and Fusilier battalions 50th Regiment about 800 men (i.e. about 40 per cent.). The 10th Division left about one-third of its strength on the field, namely, about 3,500 men.

The French loss in killed and wounded on that occasion is only estimated at from 5,000 to 6,000 men.

At Spicheren, the 12th Regiment lost about 800 men, that is, from one-third to one-fourth of its strength. The 8th Regiment suffered in like proportion. The whole French army lost, according to Marshal Bazaine, on August 14, 16, and 18, 32,000 killed and wounded, about one-fifth of its strength. The loss of the Germans on the same three days is estimated at 40,000,

i.e. about one-sixth. It must, however, be remembered, that no one German Corps fought throughout the three days, and that the battle of the 16th was not an entirely defensive one for the French. In this battle the strength of the Germans is estimated at between 60,000 and 80,000 men. Assuming it to have been 70,000, then our loss would be one-fourth. This equals that in the bloodiest of the old battles, except Borodino and Zorndorf. At Gravelotte the assailant suffered much more than did the defender.

The loss was always the greatest for the troops which made a direct attack; thus the 3rd Corps lost one-third of its strength on August 16, and the 1st Guard Division suffered in like proportion on the 18th.

The loss of certain corps was enormous. Thus the Guard-Schützen Battalion lost, on August 18, 420 men and all its officers.

The 1st Guard Regiment, also many other Regiments of the Guard and of the 3rd Corps, lost on August 16 and 18 between 700 and 1,000 men each. The number of casualties amongst the officers is out of all proportion, and amounts to one in fifteen of the killed, whilst the proportion of officers on the establishment is as one in fifty. This excessive loss is due to the fact, that good officers will, in difficult and critical situations, expose themselves much, so as to set an example to the men. And the soldiers of every army are instructed to aim at the officers.

The only offensive battle against the old French Army which was not more bloody for us than for the enemy was Sedan.

Our infantry only seriously attacked some points of the position, and there the loss was very great.

The total loss of the Germans in killed and wounded at Sedan was about 12,000; that of the French at least 30,000.

But our defensive actions usually cost us no more than one-fifteenth or one-sixteenth of our strength.

Werder's Corps lost in the three days' battle near Belfort 1,500 men, or one-twenty-fourth. There was about the same propor-

tion of casualties in the actions before Paris and Metz when we remained entirely on the defensive.

The greatest inequality of loss was remarked on January 19 before Paris. The French casualties in their sortie amounted, by their own showing, to from 8,000 to 9,000 men, whilst our 5th Corps only lost 750 men.[1]

When however it was necessary to retake positions which had been carried by the enemy, such as Champigny, Le Bourget, and Malmaison, our infantry suffered severely. A great difference is to be noticed between the losses of the Germans in the first and in the second period of the war. In the latter we had to encounter troops hastily got together, although in considerable numbers, and our losses even when taking the offensive were smaller. This proves that the breechloader is only formidable in the hands of well-trained men. If in the hands of recruits, one may say of it, 'much cry and little wool.'

Reckoning day by day, the loss in the offensive battles on the Loire never exceeded one-tenth of the strength, and the same applies to every fight in the north, even to those most obstinately contested.

The enormous losses of some corps on the Loire, as for instance the 1st Bavarian Army Corps and the 22nd Division, are to be accounted for by the great number of actions in which they took part.

If we compare the casualties in some of the principal battles of former times with those of the late war, we find that the average loss in the chief actions of 1870 equals that incurred in the first Napoleon's wars. Some individual actions are bloodier in this war, some in that. Borodino was more sanguinary than any, whilst at Leipzig the proportionate loss was smaller than in the battles before Metz.

[1] The 5th Corps (effective strength about 20,000 bayonets) bore the whole brunt of the attack. Strong detachments from other corps were in position to support it, if required, but were not engaged, except four batteries of the 4th Corps and one of the Guard-Landwehr division.—Translator.

On the other hand individual corps and divisions to which particularly difficult tasks were assigned suffered more severely in some actions of 1870 than is recorded of any battle in 1813 and 1814.

The Prussian loss in 1866 is not to be compared to that of 1870. The battle of Königgrätz cost only 10,000 men out of 170,000 Prussians engaged. At Wörth 9,000 out of 90,000 were killed or wounded. But the losses of the Austrians in several of the battles of 1866, as Trantenau, Nachod, Skalitz, and Chlum, almost equalled in proportion that of the Germans in 1870. Whilst therefore, in 1854, 1855, and 1859, the losses were clearly smaller than in the wars at the beginning of this century (thus at Solferino 10 per cent.), the loss of the Austrians at Königgrätz amounted to 14 per cent., that of the Prussians at Mars-la-Tour to 25 per cent., that of individual Austrian corps in 1866 to from 25 to 33 per cent., and that of some Prussian corps in 1870 to from 33 to 40 per cent.

This increase in the number of casualties was brought about by the breechloader, which has made the offensive more difficult without making it utterly impossible, as our former remarks tend to show.

Hence we may infer that the chief problem which the tactician has to solve in the present day is how to attack in the best form and manner; also how to train his infantry, the arm upon which he must depend for the assault, so completely, that its success will be facilitated, both by its formation for attack, and by the way in which it is handled in action.

V.

THE WAR OF INVESTMENT BEFORE PARIS AND METZ.

If the title of a work published in December 1870 was 'The War round Metz,' that title was fully justified, referring as it did to a period of the campaign when 400,000 combatants stood in arms around Metz, and on account of the magnitude of the events there occurring. We choose the expression, 'war of investment,' to suit both those extraordinary operations—the siege of Paris and the blockade of Metz.

We are obliged to go back to ancient days, even to the investment of Alesia by Cæsar, to find anything similar in military history. (Cæsar with 70,000 men blockaded Vercingetorix, who commanded 80,000 men in Alesia; he threw up lines of entrenchment round the city, which he forced to surrender in seventy days after defeating all attempts to relieve it.)

The affair in each case assumed such enormous dimensions that the words, siege, blockade, investment, seem hardly sufficient.

When fortified places and entrenched camps like Paris and Metz shelter within their lines whole armies in a condition to undertake independent attempts to release themselves, and to fight battles in the open field on the largest scale, we have before us a peculiar kind of war, one with all its own specialties.

These gigantic enterprises display to our eyes both the peculiarities of sieges and blockades, as well as of war in the open field.

The events at Ulm in 1805 ended within a few days with the capitulation of only 25,000 Austrians. The siege of Sebastopol also attained great dimensions: it was remarkable too for a sortie on the largest scale, the battle of Inkerman; but the allies proceeded at once to the artillery attack, and later to approaches in due form; besides which, neither the extent of the position, nor the number of combatants, was equal to what we find at Paris and at Metz. The investment of Sebastopol was not complete. Reduction of the place by famine was out of the question, as the allies were unable to blockade the north side of the fortress as well as the other sides. The cases were different at Paris and at Metz. Both fortresses were reduced principally by means of a complete investment, and of the famine thereby produced. If at last we resorted to an artillery attack on Paris, this was undertaken to hasten the already inevitable fall of the capital.

The repulse of sorties and the defeat of attempts to relieve the place were indispensable to the maintenance of the investment.

After its commencement all the efforts of both sides point either directly or indirectly to the attainment or defeat of this object.

The German troops before Paris and Metz had two principal tasks:[1]

1. To maintain the investment, notwithstanding its great extent, so thoroughly as to prevent the entry of all supplies, and completely to cut off communication between the fortress and the exterior.

2. To post the troops in such a manner as to be able to defeat all attempts at breaking out on the part of the garrison

[1] These two undertakings offer in their originality so much material for argument and instruction, that years will have passed before this source of experience is exhausted. Whilst we then endeavour to characterize and to examine these operations, we are convinced that we cannot present a complete picture of the *modus operandi* everywhere, though we have done all in our power to approach this end.

at Paris preparations had in addition to be made for the artillery attack.

In order to perform these tasks it was necessary to draw the line of investment as near the fortress as possible. The besieged were in this way deprived of tracts of land which would have helped to supply them with provisions. But the close vicinity of the advanced posts to the works caused serious difficulties. The artillery of the forts kept up a heavy fire on the environs, while the troops quartered in or near them might constantly disturb the German outposts if too far advanced. The greater or lesser distance of the latter from the enemy's works depended also very much on the nature of the ground and on the defensive positions taken up by the army corps and divisions.

As the French in like manner pushed their outposts pretty far to the front, the two lines were often very near one another. The pickets generally bivouacked; they also used any buildings conveniently situated for putting up the men; what our official instructions for service in the field of 1870 call 'place-bivouacs.'

The main body of the outposts before Metz was quartered generally in bivouac or in huts, indeed whole divisions bivouacked for some time. All round Paris it was possible to quarter the main body of the outposts in the numerous villages. Wherever this could not be done, in winter, tolerably solid huts were constructed. Field fortification played a prominent part in both investments. Only by means of it was it possible to maintain the investment with comparatively small numbers.

The employment of obstacles, as *abattis* and such like, in woods and broken ground, had from the first been found necessary to prevent the passage of individuals. It was determined to ensure the outposts and the actual line of defence against the fire and sorties of the enemy by means of field works.

The main lines of investment before Paris and Metz were from the very first marked out with such ability that few

alterations, at Paris none whatever, had to be made. This, however, only applies to the main lines which were traced out under direction of the commanders-in-chief. These lines accommodated themselves as much as possible to the nature of the ground. If, for instance, heights were found, as at Châtillon and Sceaux, pretty near the enemy's works, they were taken into our line, and in consequence the outposts were pushed still further forward and close up to the enemy, so as to afford time by their resistance, if attacked, for the troops lying behind them to occupy the position in sufficient force.

Generally a second, often even a third, line of defence was formed in rear of the first.

The choice of the actual fighting positions, which would be held obstinately in case of sorties, was generally left to corps or division commanders.

Although the arrangements made by these officers were subject to the commander-in-chief's approval, the principle appears to have been adopted, of leaving the greatest possible freedom of action to subordinates, and of interfering as little as could be with detail.

The authentic narratives, which we have reason to expect, will inform us whether those fighting positions were everywhere well selected. Doubtless the choice of such positions, in front of fortresses so heavily armed and strongly garrisoned, is a remarkably difficult matter.

Defensive fieldworks were, on the whole, a novelty for the German army, and, at the commencement of the sieges of Paris and Metz, were not undertaken with that industry and energy which the occasion demanded. From the constant habit of taking the offensive, many looked upon works of this nature as unnecessary ; hence the proper degree of zeal in constructing them was only displayed, after the losses suffered by us through sorties had proved how much they were needed.

After this, the work was undertaken in earnest everywhere,

and, by the daily labour of thousands, those lines were raised, which converted villas and châteaux into fortresses, and woods into impassable obstacles, like the entrenched border forests of ancient Germany.

The fieldwork which now takes the first place everywhere, or at any rate should do so, is the rifle pit. This can be constructed in a very short time, unless the ground is very rocky or frozen hard. It gives the best cover against musketry or shell fire. The line is so thin that it can hardly be hit by the enemy's artillery, and it would be an extraordinary piece of bad luck if a shell were to fall into a pit, which it is best to make narrow and deep, so that a man may stand in it. If this projectile falls an inch behind it, the occupant does not get a scratch ; if it falls in front, it must pitch right into the middle of the glacis-like parapet to do any mischief.

The defensive power of the longer rifle pits (shelter-trench) is fearful, if well adapted to the character of the ground.

But it is not easy to fix upon the right place for such a work. Ten or twenty paces more or less to the front may make the rifle pit either very serviceable or entirely useless.

When placed on a height, the first requirement is, that there should be no dead angle up to a certain distance from the work, because it is of the utmost importance to expose the enemy to a sharp fire at the most trying moment for him, that is, when he is climbing the heights. The second point of consequence is, that the trench be so adapted to the ground, that a flanking fire may, whenever possible, be brought to bear on any objects which might afford cover to the assailant.

This flanking fire may easily be obtained at need by indenting the line of rifle pits. Thirdly, the trench must not be subject to enfilade from any commanding ground.

The position must be altogether bad if the trench can be directly looked into ; which will, however, very rarely be possible.

Frequent practice in throwing up rifle pits is very desirable, both at the greater and smaller manœuvres. Every infantry

officer should be able to direct the construction of a short line properly, and to execute the work, so as to meet the object in view, with great promptitude. The rifle pit is applicable to almost every sort of ground, and specially to hilly and open country. In the level tracts before Paris and Metz, the rifle pit was the principal defensive work, and served to connect together the villages and villas which had been prepared for defence. These latter were often the chief points of appui in the line of investment before Paris, serving partly as redoubts, partly as bastions to it.

The adaptation of houses and villages to this object was not at first carried out with desirable adroitness. Practice, however, soon made perfect. Entrances to villages were closed by barricades or straight lines of earthworks, some of the larger buildings in the village serving as redoubts for the garrison.

The *abattis* played a very prominent part in the wooded districts before Metz and Paris, for securing the line of investment.

This too was not at first well understood by all, yet this is a remarkably effective method for arresting the advance of considerable bodies of troops, or at least of obstructing it. *Abattis*, as they became at last before Paris after the labour of months, present almost an insurmountable obstacle, even if weakly defended. The principal thing is to make the *abattis* as broad as possible, and to place it where it cannot be easily removed.

For instance, a ravine parallel to the line of defence is very suitable. The *abattis* must not itself form part of this line, but only serve as an obstacle to the enemy's advance. This simple rule was often set at nought before Paris. The defensive position should be some little distance in rear of the *abattis*, and, if possible, so traced as in part to flank it.

If, instead of this, you place your infantry close behind the *abattis*, the branches and leaves will generally spoil their aim ; and, although hidden from the enemy, they will not be really sheltered from his bullets.

The extensive park and garden walls afforded further excellent means for strengthening the fortified lines before Paris. They were used partly as real lines of defence, partly to cover the outposts. In some places they were very carefully prepared. Block-houses and tambours at the wall angles served to strengthen them, and to give flanking fire. Before making use of such walls it is advisable to remark whether they are visible from a very great distance, and whether they are exposed to the enemy's artillery. If this is the case, their value as defensive works is much reduced, as wide breaches can easily be made in them. If however the wall, as was often the case before Paris, goes right through a wood, it becomes invaluable as a line of defence, because artillery can have but little effect upon it, and behind it a very small body of infantry can defy an enormously superior force. This will be all the more the case if the defenders are able to make a slight *abattis* of underwood some 80 or 100 paces in front of the wall.

The following further obstacles were used in appropriate situations before Paris,—'trous de loup' with stakes, 'Cæsarpfählchen,'[1] and, before barricades and redoubts, where the timber necessary for forming *abattis* was not at hand, wire fencing.

The employment of water was likewise not omitted, the Meuse army in particular built dams to lay all the level country to the north under water, with great success.

Again, block-houses were erected at different points to give support to the lines of rifle pits, *abattis*, and walls. This was often done at the extreme advanced posts, the garrisons of these works being instructed to hold them at all hazards, and, should the enemy pass the first line, to harass him by a continual fire. These block-houses were generally sunk in the ground, not

[1] We know of no corresponding expression in English. 'Cæsarpfählchen' are short pointed stakes sticking out of the ground to the height of 12 or 18 inches, placed pretty close to one another, but at irregular intervals and in several lines, on ground which the enemy must cross to get at you.—TRANSLATOR.

showing more than two feet above it They were made bomb proof, the garrison being thus almost entirely safe from shell fire, and in fact were not to be easily captured.

Their garrisons received two or three times the usual supply of cartridges. These block-houses served at the same time to shelter pickets from the perpetual shell fire which was kept up day and night from Paris and from the outworks. Lastly, before both fortresses, redoubts for artillery and infantry were constructed. (Of course we are not speaking here of the batteries constructed on the south front of Paris for offensive purposes, but only of those intended to strengthen our lines of defence.)

These redoubts were thrown up at various points suitable to the object in view. They were, as a rule, only occupied by field artillery when a sortie was made. Simple *emplacements* for guns were also very common.

The effect of the heavy garrison and ship guns at long ranges appears at times to have been overrated, and, in consequence, field artillery to have been kept very far back for the defence of our lines, whilst, at other points, just the contrary may be said. The latter course will, as a general rule, be the better one. It was proved, in many instances, that field-guns, by frequent changes of position, had the power of greatly checking the fire of the forts, at the same time avoiding loss.

Infantry redoubts were constructed for the purpose of closing particular roads and approaches to the enemy, and at the same time to shelter the infantry supports from the enemy's artillery fire by the thickness of their parapets. These works certainly have their place, but they afford a good mark for the enemy's guns, and, as a rule, bring a less effective fire to bear than a shelter trench.

In order to afford the picket a tolerable security from shell fire, many houses before Paris were covered in with bomb proof roofs. Their first or even second floors were covered with a layer of sand-bags ; on these were placed railway plates or

beams, and on these again a few feet of earth, sods, or sand bags. This was very unsafe when applied to houses of sligh construction, and it was commonly asserted that, if shells shoul happen to fall upon it, the whole building would be brough down by the weight of its upper works. Besides which, thi plan of covering in houses entailed much labour and took muc time.

The same end is better attained by constructing undergroun posts, which in fact was done at some points of the line o investment.

These are made by digging four feet into the ground (for it i necessary to allow room for the men to sit up), and by coverin in the excavation, which is made more or less wide, accordin to requirement, with beams, on which are laid sand-bags o earth.

To prevent the place from being flooded, a drain is made al round it.

In all such positions, the best shelter is to be obtained by burrowing into the ground.

The construction of breastworks takes much more time, an they do not afford any protection from vertical fire. Thi principle was carried out, as before remarked, only at particula points in the line of investment round Paris. But this is to b noted, that although the French shell fire, as a rule, did ver little harm, one should naturally have done one's best to avoi all loss.

We have mentioned briefly the use made of entrenchment to maintain the blockades of Paris and Metz. If the works executed at Metz did not attain the same perfection as at Paris this is to be explained by the shorter duration of the siege. O the whole, no particular or radical difference will be detected a to the manner of using field fortification at the two places, o at any rate materials are wanting for the discovery of any suc difference.

But other great differences exist in the general condition of affairs before Paris and Metz.

At the latter place, a brave regular army of about 150,000 combatants was enclosed, in consequence of the battles of Borny, Vionville, and Gravelotte. The army of Prince Frederick Charles amounted, after the losses in those actions, to some 200,000 men.

Whilst the numerical superiority was on the German side, the French had, on the other hand, the power of assembling their forces quickly at any particular point, so as to fall upon a part of the line of investment with the advantage of superior numbers. Hence the French army was at the commencement of the siege in a position to attempt its own release. In Paris, on the contrary, there was at the time of the first investment no sufficient force for this purpose. Certainly there were then, according to Trochu's own showing, 60,000 regulars present. But the combat of September 19 showed so clearly the inferior quality of these troops to that of the Germans, that all idea of breaking out was for the time abandoned.

During the next few weeks, the besieged made vigorous sorties merely to reconnoitre the German lines, to accustom their own troops to fire, to recover this or that point, and principally with the view of forcing the besiegers to draw their line of blockade further back, in which last object they entirely failed.

During the first period of the siege of Metz the task of the Germans opposed to Bazaine's army, brave as it was and fit for action, was a more difficult one than that of the 3rd and Meuse armies before Paris.

But the battle of Noisseville soon showed that the battles from August 14 to 18 had shaken the *morale* of the besieged army. The deployment of the French in this action was executed with incredible want of skill and slowness, equally so their advance. Advantages were not followed up, and were again lost. The place was so badly supplied that the besieged

had at once to begin eating up their horses; hence in a short time the army was deprived of much of its fitness for the field.

Provisions soon became scarce, epidemics broke out, and a complete cessation of activity ensued on the part of the French, up to the end of September and beginning of October.

The case was different in Paris. There, not only did the condition of the garrison improve daily during the first months of the siege, but the forces available for action were enormously augmented by the enrolment of more than 100,000 Garde Mobile, and by the formation of eighty 'bataillons de marche' of the National Guard. There was plenty of food during the first months. For a time there was no cessation of sorties. The attempts of September 30 and October 13, 21, and 30 followed one another in rapid succession. Numerous smaller affairs took place, to beat up and reconnoitre the Germans. During November, however, the garrison contented itself with making some little sallies, and with preparing for the grand sortie-campaign to begin on November 29.

The 3rd and 4th Armies appeared before Paris with a strength of barely 170,000 men, but were reinforced by drafts from home up to about 200,000 men, which henceforth continued to be the average strength of the besieging army.

The German armies before Paris and Metz were thus of about equal strength, but whilst that besieging the latter place had only a line of from eight to nine leagues (from twenty to twenty-two and a half English miles) to occupy, the lines round Paris had an extension of from eighteen to nineteen leagues (from forty-five to forty-seven and a half English miles). The extreme difficulty of the blockade of Paris arose from this circumstance. It is this which, in our opinion, renders this siege one of the most remarkable and most brilliantly executed operations recorded in history. During the siege, almost all Europe was deceived as to the thinness of the line of investment. Not only were the troops constantly kept on the alert, and wearied by the severe duties on outpost and working parties, and

by their constant state of readiness to repel sorties, but relief was impossible, as during by far the greater part of the siege there was no reserve corps. For a few weeks only the 1st Bavarian Army Corps, afterwards the Guard-Landwehr Division, formed a reserve against sorties. The corps which formed the actual besieging army, namely the Guards, Saxons, 6th, Würtembergers, 2nd Bavarian, one division of the 11th, 5th, and 4th, remained constantly without rest for four months and a half in the position assigned to them on September 19.

Paris is a world in itself. Such a city can set in movement for its defence, forces of enormous size and of various kinds. It must be confessed that the French capital showed itself full of zeal and energy. One cannot expect undisciplined National Guards to fight like well-trained and experienced soldiers, but in many other ways the whole population contributed to the defence. The extensive industry, the private establishments of the gigantic city furnished the means.

Never before were such vast manufacturing resources at the disposal of an army, enabling it in every way to make head against the enemy. In order if possible to keep up communication with the outside, balloons were employed by the Parisians to an extent never before known. Telegraph wires, buried under ground and sunk in the beds of rivers, were from time to time discovered by the Germans. Carrier pigeons brought news from the provinces.

Gunboats and ironclad waggons came into play. But, above all, much was done in Paris in arming the works. Private enterprise contributed greatly to the manufacture of guns of new construction. Never before did a fortress possess an armament of such heavy and far-ranging pieces as did Paris, never before was there in a besieged place so numerous a body of field artillery available for offensive operations.

At the beginning of the siege there were fit for service in the place 576 field-guns and 2,627 siege-guns. This number was increased considerably by fresh additions. Private enterprise

alone, contributed—amongst other things, 50 mortars of 15 centimetres (nearly 6″), 215 mitrailleuses, and 300 14-pounder breechloaders. At last there were in Paris 648 field-guns, 3,192 siege-guns, altogether 3,840 serviceable pieces.

A work lately published asserts that the French army in Metz showed greater endurance than the army and inhabitants of Paris, both against famine and the sword.

We have already shown that the real strength of the army of Metz was broken by the battles of August 14, 16, and 18, and by that of Noisseville. The sorties of September 23 and October 7, the latter of which caused considerable loss to the Prussians, cannot be compared with the sanguinary and vigorous onslaughts on a large scale of November 30, December 2, and January 19, in which the French attacked with great energy though with little skill, not to mention half-a-dozen combats of some importance and the many smaller sorties which took place before Paris. The army of Metz indeed stood out to the last against famine. But we cannot refuse the same praise to the Parisians. It was high time for Paris to capitulate. Eight days later and the starvation of many thousands would have been imminent. For a month before the surrender, Paris eat bread made of oats, barley, and coarse flour.

The capitulation of Metz had been foreseen for some time beforehand with tolerable certainty, and the idea of an artillery attack had never been entertained.

This question arose at Paris as soon as we were convinced that the defence would be stout and lasting, that is to say, directly after the first investment. Opinions on this subject were much divided, and the matter was, it is said, discussed at a council of war. Some were in favour of forcing a surrender by famine alone, others by a regular attack upon two or three forts, a third party advocated a bombardment. The stock of provisions in Paris seems to have been generally under-estimated by our side, and it was very difficult to form a correct estimate thereof.

The greater part of the German army had at the beginning of the siege some illusions with regard to the power of resistance in Paris independently of the question of supply, and particularly with reference to the active side of the defence.

The Head Quarter Staff began, soon after the first investment, to provide for the possibility of not being able to take Paris without the employment of artillery, for the transport of guns commenced as soon as our railway line was free, very shortly after that of food, which above all would not admit of interruption.

(The supply of the army before Paris was managed excellently well during the whole siege. During the first eight days only, there was a great scarcity of meat. After that time the author does not remember a single day on which each man failed to receive from three-quarters to one pound of meat with vegetables, bread, and coffee in abundance, often with the addition of a quantum of Schnapps or wine.)

A smaller park of artillery would doubtless have been necessary for the purpose of overpowering some of the forts by a regular attack, than was required for a mere cannonade of the works and town from a great distance. After taking some of the forts, however, it would be necessary to commence our approaches anew on the enceinte, and, after storming that, perhaps to engage in street fighting on the largest scale. It appeared certainly feasible to force a surrender by an unsparing bombardment of the nearest part of the city, after occupying two forts. Possible but not certain! It was determined at once not to attempt a regular attack. We believe, however, that the principal reason for this decision lay, not in the difficulties presented to the attack by the different means of defence, but rather in the weakness of the disposable force. It has been already remarked that for some time there was no reserve corps.

The troops which occupied the line of investment had, what with guards and working parties, very severe duties to perform. How then would it be possible to make our forces suffice if extra work were thrown upon them by the construction of parallels and

approaches, to cover which moreover against the numerous sorties which the enemy would doubtless make, it would be necessary to employ far more troops, thus adding to the strain upon the Army?

When the bombardment was opened in January it became necessary, after ten or twelve days, to bring troops from a distance to the line of investment, to assist in carrying on the siege-works, as the powers of the besieging corps were insufficient for the purpose. A regular attack appears to us to have been an impossibility without providing reinforcements on the front of attack. But were we not in a position to bring up one or two more divisions of mobilized Landwehr to the side which it was intended to assail without taxing too much the strength of Germany?

The bombardment seemed a doubtful affair from the commencement, in consequence of the great extent of the object fired at; many admirers of our artillery, and above all the German public, would not believe in it. It would evidently require a much greater number of guns than would the attack in due form (there could be no doubt of this), if we wished to produce an effect to be felt throughout the huge city. The transport of such a large number of cannon was long delayed; perhaps also we reckoned week after week upon gaining our end by the increasing scarcity of provisions, and by the repulse of all attempts at raising the seige.

But Paris still held out, so that at last it was determined to undertake a mere artillery attack by opening fire at long ranges with the prospect of making approaches later if requisite. Many differences of opinion arose as to the proper direction for the artillery attack, and it has now been very decidedly affirmed that it would have been better to make the attack against St. Denis than against the southern forts.

It is pointed out that St. Denis is a fortress in itself, like the other little French fortresses such as Toul, Thionville, and so forth, which all succumbed within a few days to the German

bombardment, and from this it is concluded that St. Denis must in about the same time have been evacuated by the French, and would, as it was, have been evacuated if the bombardment, commenced actually on January 21, could have been continued for some days longer. It is further maintained that, after taking St. Denis, we might, by bombarding from thence the most populous parts of Paris, have produced a greater effect than from the south side.

We cannot deny that there is much to be said in support of these views, but those who advocate them take no notice of the fact that St. Denis was not invested as were the other small fortresses referred to. The French had the power, like the Russians at Sebastopol, of changing the garrison, and the inhabitants might at any time have removed to Paris.

An attack in form would therefore probably have been necessary on St. Denis, and for this the south side offered an equally favourable chance of success. The heights which approached so near the southern forts no doubt facilitated the bombardment. Our batteries had, as soon as fire was opened, uncommonly hard work against the enormous artillery power of the forts and enceinte, and though we are far from presuming to give a decided verdict on this subject, we are of opinion that, after the detached attack was made on Mont Avron, the only thing which could produce a speedy effect on the works was a concentration of all our artillery power on the south front.

With respect to the influence of the actual bombardment on Paris we may conclude, from many reports which agree with one another, that it much disquieted the population, and had a very depressing effect.

The cannonade began in fact four weeks before the capitulation, and was first directed against a point which, soon after the commencement of the siege, had been converted by the French into a sort of 'place d'armes,' and which might have much facilitated an offensive movement on their part against our line. This obliges us to cast a glance upon the mode in which Paris

was defended. (No doubt some of the defensive measures adopted at Paris were equally applicable to the state of affairs at Metz. But as we have no accurate knowledge of the progress of the blockade of that place, we cannot in this instance draw a parallel between the two sieges.)

The French had pushed forward their outposts to some distance from their works, making every use of localities, and covering them from fire and assault by field-works. Thus considerable tracts of country and many villages remained in their hands. At the commencement of the siege the French came out rather shyly. But when they had had a little time to take breath after the combat of Bicêtre, and to perceive that the Germans were confining themselves to the fortification of their line of investment, they began to regain confidence, and, re-occupying some of the buildings and villages which they had abandoned, to fortify them. They could certainly do this in complete security, for our field artillery very seldom departed from the principle of refraining from annoying the French in any way so as to avoid a conflict with the artillery of the forts

This was no doubt a very correct principle, but it had its disadvantages, for the French began with activity and skill not only to complete their system of fortification with entrenchments, but almost to take the offensive against our positions with spade and pick, and to surprise us by the construction of works close to our position and very annoying to us. They showed much professional skill in doing this.

We have only to thank the steadiness and coolness of our infantry, which quietly maintained its position in spite of the shell fire always coming nearer, and always ranging further, for preventing the French from pushing their works still forwarder. On the contrary, the Germans advanced their infantry posts at many points into the interval between their lines and those of the enemy, by which means they in turn forced the French to abandon some of their posts. Our main position was only

thrown forward at the end of December and in January at certain points where the bombardment had produced successful results, as at Mont Avron and Fort Issy.

The French had adopted the principle at Paris and to a less degree at Metz, not only of firing upon our works with their heavy and far-ranging artillery, but also of constantly harassing us in our cantonments, by cannonading us at uncertain hours by day and night. As we have already stated, this fire did little harm, but it disturbed the men (wearied with their hard day's work) by the bursting of shells which fell more or less near them, created some alarm, particularly during the first few weeks, and hindered to a great extent the free movement of the troops.

Work which could not be concealed from the enemy could only be carried on by night.

The besieged fired on our outposts and on the nearest cantonments with Chassepots and light artillery, whilst his heavy ship and siege-guns ranged to enormous distances, as far as the positions occupied by our reserves. The ranges increased at last to 10,000 and 11,000 paces, as the Parisian workshops kept turning out fresh monster guns. We had no power of replying to the Chassepot at long distances. It cost us many lives. This passive endurance of the German troops in danger, without giving up an inch of ground, this forced state of constant readiness to repel desperate sorties, so nobly borne, were the finest traits of military excellence to be noticed before Paris and Metz.

When the French purposed making one of their greater sorties, they generally opened a heavy fire from all their forts and field-works. This was good policy. They did not wish to lose the advantage of a heavy artillery fire upon the front to be attacked, but in order to conceal their intentions they fired from all sides. So that in the course of a single night many hundred shells often fell on the ground occupied by one or other of the corps.

Without reference to the fronts on which our batteries opened

fire at the end of December and in January, our field artillery also took upon itself to cannonade the French outposts in certain situations, thus paying them off in their own coin. This was done from hilly or wooded country almost without loss.

Our infantry was not prevented by the French fire from sending out distant patrols day and night. Points which the enemy had not dared to occupy were occupied by the Germans, and the French often evacuated detached advanced posts when our fellows got close to them. The German infantry showed themselves here as far superior to the French in boldness and enterprise, as did the cavalry in the open field.

Offensive movements on the part of the Parisians could only commence when they had got their army into tolerably good order for the field.

Their troops were full of good will, but we have already shown that their value was comparatively small.

The Germans had so fortified themselves in their positions during the ten weeks between September 19 and the end of November, that every attempt to break out was sure to encounter a resistance difficult to overcome.

It is a very difficult matter to sally forth from a fortress even against unfortified positions, for the investing force has this great advantage, that the besieged can never take it in flank, being themselves surrounded by the position of the besiegers. They must therefore attack the latter in front, to which the breech-loader opposes great difficulties.

Besides which, to deploy considerable masses of troops amongst the works of a place, and to make them debouch from its gates, requires much time and a great power of manœuvring. Of the three great sorties from Paris, one was made on November 30 towards the south, with a view of communicating with Paladines. This sortie was undertaken at a point where the French had very little opportunity of deploying their forces even after they had passed beyond their lines and crossed the Marne.

The second sally was directed against Le Bourget and Stains on December 21, and had the advantage of a plain favourable to deployment. But it was carried out tamely. The German artillery, favoured by the open plain in front of it, had an extraordinary effect; and Trochu may in this case fairly assert, that the German infantry was little engaged, but this was only because our artillery fire was of itself sufficient to prevent the enemy from attacking in earnest.

One cannot say either that the ground chosen for the last great sortie of January 19 was favourable to the purpose. There was certainly more room for deployment than on November 30, and certain points could be approached fairly under cover, but the Prussian position was in itself very strong, and the attack failed in spite of the most furious exertions of the 120,000 men who had taken the field. Trochu has now made known by his speech in defence of himself in the chambers, that his 'plan' was to cross the Seine between Chatou and Argenteuil, after completing the organization of his field army, and then, having broken through our lines, to march on Rouen.

He adds that it was known in Paris that the Germans had thrown up no works of any kind near Chatou and Bezons, and expected no attempt in that direction. This last assertion is not quite correct. The Germans had several times received information of an intended offensive movement in those parts, but whether the change of 'plan'[1] was known, or whether it was thought that the French would recoil before the difficulties of an advance in that direction, no reinforcements were despatched thither, nor were any works thrown up between Chatou and Bezons.[2] The only reason for the latter omission appears to be that we were supposed to be sufficiently covered by the Seine. But the line of investment running here close to the river was

[1] This 'plan' of Trochu gave rise to many couplets and to dozens of *bons mots* amongst the Parisians.

[2] In December only some works were commenced between Chatou and Carrières St. Denis.

very weak. At the beginning of the siege, the right wing, 11th Army Corps, was at Chatou. Later on the Guard Landwehr division quartered at St. Germain, which now and then was reduced to four or five battalions, sent some detachments there.

If the French had succeeded in concentrating in the dusk of evening unobserved even only 30,000 men in the extensive peninsula of Gennevilliers opposite Chatou and Bezons, and if they had used their boats and pontoons half as cleverly as the Prussians did at Alsen, it would not have been impossible for them to throw a strongish force over the Seine next morning, and to break through our weak line of defence. As soon as the first troops sent over in boats had gained the other side, the construction of a bridge might have commenced, which would have been facilitated by the island extending from Bougival as far as Nanterre. But if a successful passage of the river, and in consequence thereof a momentary success were not beyond the bounds of possibility, one may yet ask whether the nature of the country would have any further favoured this plan of Trochu's, or rather of Ducrot's, for the former gives the credit of the idea to the latter. The Seine which bends to the north at Bougival, and after St. Germain takes a north-easterly direction, forms on the right bank a similar, only smaller, peninsula to that of Gennevilliers on the left bank.

If the French wished, in order to get out of the narrow peninsula, to follow the direction of the Rouen railway and road, they would be obliged to cross the Seine twice more, which would be accomplished with difficulty, and in face of a formidable resistance on the part of the Germans, whose attention would by this time have been directed to this point.

If they wished to march by Argenteuil, they would have had to deal with the 4th Corps and some cavalry brigades, which would have encountered with success the enemy cramped as he would be on the peninsula.

The 5th Corps would also, in the first case, have come into

action with its artillery commanding the space from Bougival to Chatou, just as, on January 19, the fire of the 4th Corps ranged over the whole district from Chatou to beyond Rueil.

Therefore, when we consider the nature of the ground and the tactical conditions, we cannot suppose that even the unexecuted plan of Trochu would have succeeded.

If, from strategical considerations, it was considered necessary to break out towards Rouen, it appears to us that the simplest operation would have been to take the line Epinay-Pontoise.

In our opinion, the most favourable conditions for a sortie were offered by the south side. They could either take the direction Vitry, Choisy le Roi, Juvisi; or Maisons, Alfort, Villeneuve St. Georges, Corbeil. It was also possible to advance on both banks of the Seine.

The Germans (6th Corps) had to maintain themselves on that side in a fairly level country affording sufficient room for deploying the French forces. They made no grand sortie however precisely in that direction; but only a strong *reconnaissance* (September 30) and a demonstration (November 29).

An important circumstance for the defence of Paris was the perfect security of the troops lying under shelter of the forts, and in contrast to this the perpetual state of disquiet in which the Germans were kept. To increase this state of disquiet to the highest pitch should have been the aim of the French, and they did not do enough towards this during the first months of the siege. They certainly made some great sorties, but otherwise contented themselves generally with making demonstrations with some few battalions, which at first indeed alarmed whole divisions of the besieging army, but, later on, were hardly noticed, and at the outside induced us to place in readiness the supports of the outposts. What contributed to our comparative security in this respect was that we had permanent officers' posts at well chosen points, keeping there the same officers during the whole siege, who gave immediate notice, either by telegraph or by

mounted orderlies, of any really important movement of the enemy.

It would have been better for the French if they had created alarm at night by frequent energetic sallies of small detachments (300 or 400 men). But both in Paris and Metz little of this kind was done. The principal guarantee of safety to our lines before Paris during the night and during the thick fogs which lasted sometimes for days was our employment of patrols with which our front swarmed. This precaution alone enabled us to summon assistance in time to occupy in sufficient force our outer lines of defence when attacked. We shall give the best idea of the position of the army before Paris and of the organization of the duty, if we describe a part of the line of investment perfectly well known to us.

The distribution of the troops and the arrangements for duty were not exactly the same throughout the besieging army, because the Germans do not hold to the principle of rigid centralization even in war time; but the measures which we are going to detail were at any rate of a similar nature to those adopted elsewhere.

To the 5th Army Corps [1] had, in accordance with the general dispositions, been assigned the line of St. Cloud, Vaucresson, La Celle St. Cloud, Bougival. Both the right and left of the position rested on the Seine, thus closing the peninsula of Gennevilliers. The strong fort of Mont Valérien formed, together with the entrenchment thrown up round it during the siege, a system of fortification which prevented the Germans from penetrating further into the peninsula. Each division of the 5th Corps had its own particular section to fortify and defend. The outer line

[1] This sketch of the arrangement for defence made by the 5th Army Corps is contributed by Captain Pirscher; and maps of Paris are so wide-spread that we take it for granted that our readers are either provided with the same, or have at least a general knowledge of the localities.

The 'Carte du département de la Seine exécutée au dépôt de la guerre' (scale one inch to 1,000 mètres) is an excellent map of Paris and its environs.—Translator.

of the 9th Division extended from St. Cloud over the heights of Garches, as far as the Château de la Bergerie, whence our abattis led to the Cucufa pond.

The second line, which was the actual defensive position, began from the south park wall of St. Cloud, and extended with a formidable succession of redoubts, batteries, and abattis past Villeneuve, to the north of Vaucresson, up to the so-called pond of the Swan. We shall make no further mention here of the remaining defences of the 9th Division, but pass on to the position of the 10th Division, which we wish to describe.

The first line of the 10th Division may be indicated by the points; Vacherie de St. Cucufa, La Jonchère, Villa Metternich, the northern entrance to Bougival; the bank of the Seine, opposite Croissy.

This line was divided into two sections: Section I. extended from the right, that is, from the Cucufa pond to La Jonchère. Section II. reached from that country-house past Villa Metternich to the Seine.

A row of redoubts on the plateau of La Celle St. Cloud served as second line and main position, continuing thus with abattis and walls up to the Metternich park, on the almost impassable ridge of Bougival.

The village of La Celle St. Cloud was the cantonment for the troops of Section I. not actually employed on outpost duty, and the village of Bougival for those of Section II.

The third line of the division began at the shooting box of Butard, built by Louis XIV., and passed by Beauregard, divisional Head Quarters, the farm of Bellebart, Les Greffés, village of St. Michel, following the heights on the west of the ravine of Bougival down to the Seine.

The reserve of Section I. was contained in the village of Roquencourt and Les Chesnay; that of Section II. in the village of Louveciennes.

We shall not give a minute account of the defences of these lines. It will be sufficient to say that they were effectually

strengthened by abattis well adapted to the ground, by fortified villas, rifle pits, block-houses, redoubts for infantry, batteries, barricades, and obstacles of all kinds.

We may here mention, as an example, of a colossal obstacle, such as perhaps has never been before seen, the entanglement which stretched from the Cucufa pond up to the park wall of La Malmaison. This entanglement had an average depth of from 100 to 150 paces, was made of the largest trees, and had both in front and rear twelve rows of *trous de loup*. It was enfiladed most effectively by loop-holed walls and rifle pits; but it would have taken many hours, even if undefended, to clear it away to the width of fifty or sixty paces, without using explosive materials.

The post in the gamekeeper's cottage near the 'porte de Longboyau,' in Section I., and the park and château of Malmaison in Section II., may be looked upon as two great detached advanced posts in front of the division; the former a block-house with a garrison of forty men, and a wall-piece, which furnished a chain of double sentries up to the château of Buzanval, the latter, occupied by a weak picket, were abandoned by the Germans on October 21, as well as on January 19, the defenders retiring to a position prepared at the south end of the park, and also strengthened by a block-house; whilst the garrison of the post at the gamekeeper's cottage and of the wall running to the right of it was able to maintain itself on the last-named day.

All works of fortification were executed by the infantry with some directions and assistance from the Pioneer Corps, but in great part by the infantry alone.

The distribution of the troops and details of services were as follows :—

One brigade, one battery, and one squadron, formed the advance guard, and were detailed for six days' duty at the out-posts, in immediate support of the first line, and to be held in constant readiness. One infantry regiment occupied each section. From each of these again a battalion was told off for

actual outpost duty ; two battalions of each regiment forming the immediate reserve of the sections were quartered at La Celle St. Cloud and Bougival.[1]

The outpost battalion had, according to the last divisional instructions, a whole company broken up into pickets, whose strength, situation, and composition, were always the same; certainly the most practical method, as it avoided the evil of breaking up several companies. The three other companies formed the support. One or two sections of cavalry performed the orderly duty in each section.

The support of Section I. was posted on the plateau of La Celle St. Cloud, at the kiosk of the Empress. The men lay there partly in huts, partly in detached buildings. This plateau was at the same time the place of assembly for the whole immediate reserve of the section, so that, in case of alarm, four battalions could always be assembled there.

The supports of Section II. were posted, one company at the barricade which closes the Rueil road at Malmaison park, the two other companies a few hundred paces to the rear, in the first houses of Bougival. Including then the sentries over the arms and the camp guards at the stations of the supports, there were daily in the two sections altogether 400 men on actual outpost duty ; about 1,200 men in support and in readiness to turn out. We do not think we could have done with less men in the position occupied by the division.

Artillery also was at first placed in first line. Afterwards it was withdrawn and attached to the immediate reserves. It was thought that there were many objections to the employment of artillery in the first line of the whole position, partly on account of the fire from the works, partly because the formation of the

[1] The distribution and strength of the troops told off for outpost duty were of course modified according to the nature of the ground. Thus the regiments of the 6th Army Corps, which occupied generally open ground, had six days in the main reserve and only three on outpost. Each division had only one battalion employed daily on outlying picket duty.

ground favoured in many places a close approach of the enemy under cover. It is true that, particularly on the left at La Malmaison, the town of Rueil was close in front of our most advanced post. This, however, could not be remedied, unless Rueil itself were occupied, which would have been an impossibility under the fire of Mont Valérien and its outworks. Owing to the close neighbourhood of the enemy, musketry fire was kept up on many days, with only brief periods of intermission.

The remaining troops of the division (the rest of the cavalry regiment, two batteries, and one infantry brigade) remained in the above-mentioned cantonments further back, and formed the main reserve. The troops quartered in Roquencourt and Les Chesnay relieved the battalion employed on outpost duty in Section I., and those in Louveciennes, Les Greffés, St. Michel, and Bellebart relieved those of Section II. In this manner the same two regiments always exchanged outpost and reserve positions in the same section. But in order to make the troops acquainted with the whole front of the position, the divisions exchanged sections every four or six weeks, a plan which was not adopted along the whole line of investment, but which was of great use. Thanks to it, officers and men found themselves everywhere at home, even if employed in another section.

The alarm post for the main reserve was the square in front of Château Beauregard, where the divisional Head Quarters were established. From this point reinforcements could be sent at pleasure, to one or the other section.

It was established as a general principle of the defence that every post, even one of observation, should hold its ground obstinately until obliged to retire by a considerably superior force. The first line of defence was to be held at all price. It is evident that this was often a difficult task for the defenders without direct artillery support against the fire of the works and of the enemy's field artillery which came out, for the main position of our artillery was in second line at the village of St. Michel.

From thence at least it could give support to the left wing of the position.

A division of labour arranged after a mature consideration of the circumstances, was here, as in all parts of the line of investment, very beneficial to the defence.

This was particularly important for the battalions on outpost duty, which, employed as described, sufficed to repulse any sudden onslaught.

Both immediate and main reserves were to be kept together as long as possible at the disposal of the commander, and were only to send reinforcements to the line of defence, if the necessity for this measure was very evident. During the sortie directed against the division on October 21, two battalions of the main reserve were brought into first line, but on January 19 it was possible to keep the main reserve intact.

An officer's post, situated on the heights of La Jonchère, in a house somewhat concealed from view, and supplied with the best telescopes, greatly lightened the labours of the look-out parties on outpost duty during the day and in clear weather. (Here Lieutenant von Malachowski, 37th Regiment, and an assistant colour-sergeant, 46th regiment, kept faithful watch during the whole siege. On January 19 they were driven out by three shells, which struck the little house and also killed the officer's orderly. Thanks to this excellent measure, all unnecessary alarm was, as a rule, avoided in clear weather.) An advance of the enemy in earnest, at night, particularly in cloudy weather, was looked upon as very unlikely, but nevertheless our patrol duty was carried on very watchfully and extensively. In this, infantry alone could be employed, and the importance of this branch of duty to the arm was nowhere displayed so fully as in the war of investment.

The hour at which we had to be most watchful was just before sunrise. If the French wished to undertake anything, it was almost indispensable during the short winter days to commence operations early, therefore to concentrate during the

night so as to be able to move off at early morning. But the thick fogs which were common in the environs of Paris, particularly in the Seine valley, often prevented any view. For this reason, a company advanced every morning some hours before sunrise from each section, as near as possible to the enemy's position, with orders to listen for any movement behind his outposts. These patrols naturally often came to blows with the French.

Every morning, before daybreak, the immediate reserve got under arms and remained at the kiosk of the Empress, until reports came in from the patrolling companies that nothing suspicious was remarked.

The main reserve was, when sorties were expected, often in like manner concentrated at the alarm-post in the morning, and was almost always on other occasions confined to quarters.

Working parties, which were required uninterruptedly to the end of the siege, were furnished not only by the outpost brigade, but also by that in reserve. On account of the French fire, work could only be carried on by day in woods, or behind heights, in other places the work had to be done by night. The average daily number of men employed in working parties may be reckoned at 800. For some time also, working companies were formed out of all the masons and carpenters of a brigade. The French line of outposts, extended opposite to the 10th Division from the farm Fouilleuse to the villa Crochard, then passed 2,000 paces west of Mont Valérien by the so-called 'blown-up house' to Rueil, and thence diagonally across the level plain to the railway station and the Seine. This position was entrenched, the buildings prepared for defence and connected by rifle pits. After October 21 the French constructed a great work, called by the Germans the windmill redoubt, which, situated on a promontory in the Seine, enfiladed a part of our position. To the south of the 'blown-up house' also, several *emplacements* for guns were thrown up towards the end of the siege. This was the case at Rueil railway station. From

thence our outposts were so molested, that, at the end of December, our field artillery opened fire from St. Michel and soon silenced the French artillery at Rueil. Thenceforth our field artillery opened fire on the French outpost position without suffering any loss from their fire. Thus we end the description of the position held by our corps in the line of investment. May this narrative give occasion for a comparison of the various modes adopted by the different corps of organizing the duty, of fortifying the position, and of distributing the troops. Such a comparison would undoubtedly be of use.

Every civilian even knows that the engineer corps and the pioneers are not sufficiently numerous to execute alone all the works required in the field or in siege operations. Their task must, therefore, chiefly consist in directing these works according to a plan, previously determined upon, of the portions of the ground and of the lines to be fortified. An early decision, as soon as possible after opening the siege, as to the works to be undertaken, is above all of great consequence, because alterations in the position and in the defences should be avoided, as far as practicable, so as not to waste time and labour. If, as was the case before Paris and Metz, troops of different corps and even of different armies, form the investing force, this becomes all the more necessary. Otherwise it may easily happen that weak spots will be found between corps or even divisions, which will give the enemy a good opening for offensive enterprises.

A very careful *reconnaissance* of the country should, therefore, precede the construction of fortifications. Possibilities and chances should be carefully weighed, and the direction of the works should be given to an engineer officer under supervision of the officer commanding the section. This system of entrusting the general direction to officers of the engineer corps in combination with officers of the general staff, or even with the commanding officers of each corps, seems, however, not to have been adopted in all parts of the line of investment round Paris.

More often the performance of some special task was assigned to these officers.

It is said that in many parts the fortifications did not show over long tracts of country that unity of plan which is so desirable. Perhaps the employment of engineer officers for these duties was rendered difficult by the fact, that they had a great deal more to do besides.

In addition to the numerous works, such as bridge-making, repair of roads, search for the enemy's means of communication, &c., came very soon the preparations preliminary to the projected bombardment, or regular attack, such as the manufacture of fascines, gabions, and so forth. Certain works also, for the execution of which infantry soldiers have not the requisite technical knowledge, such as the preparation of block-houses, were attended to by the pioneer companies in the cantonments, the materials prepared ready for setting up being then removed to the proper place.

From the want of unity of plan which appears here and there to have existed in laying out the fortifications, arose often the execution of works which did not entirely agree with one another, and which did not fulfil the purpose for which they were intended.

(We guard ourselves against wishing to make an assertion applicable to the whole line of investment, but what we have stated applies, by unanimous report, to certain parts of the same.)

In general the greater part of the works of fortification before Paris were executed by engineer officers designated for the purpose, under orders of the commanders, officers being selected who had been attached temporarily to the pioneer battalions.

This measure, already so long carried out in peace time, now bore rich fruit, and completely established its utility. It is one of the regulations of our military administration, which has almost entirely escaped public notice, but which deserves particular praise.

The works directed by engineer officers, however excellent they may have been with regard to their technical execution, did not always show that these officers had, so to say, understood how to reduce to practice the tactical ideas of the present time. One might not only often remark that they had missed a just comprehension of existing infantry tactics, particularly of the effects of fire of the breechloader and other arms lately introduced, but also that they had not understood the ground or made use of it according to correct defensive tactical principles. Field fortification must be based upon tactics, and especially upon defensive tactics, and must keep pace with their progress.

The art of planning works of this description is evidently quite different from that of an engineer attack upon a fortress. The nature of the former is defensive, that of the latter offensive. The works of attack were, it is said, executed excellently well by our engineer corps, but this is beyond the range of our remarks.

But if you wish to employ the art of field fortification correctly, and nowhere is it more difficult than in great operations of investment, you must enter heart and soul into tactical questions in combination with your technical knowledge.

There is a great difference between the correct construction and defilade of a field-work in known ground and the laying out of field fortifications of practical value, in perhaps a very difficult piece of country under the overpowering fire of the enemy. Operations of investment will, however, most certainly not be out of place in future warfare.

The importance of great fortresses is clearly proved. All the more should one study the nature of this kind of warfare, in which the speedy and judicious construction of field-works in the line of investment plays a prominent part. If one is in a position to satisfy all requirements of this description, it will be possible, with an equal force, to enclose an army in a great fortress, and to defeat all its attempts at breaking out.

Our works were not always technically models of art. For

instance, we don't know how to make a barricade; yet this is a work of constant occurrence in the defence of towns and villages.

One often saw a lot of woodwork, furniture, rubbish, and trash heaped up for this purpose, which certainly would have been blown to pieces by any shell which happened to hit it.

Earth, stones, and beams bound together form the best mixtures to withstand artillery fire. A barricade must always be made in two parts, so that a passage may be left open for your own troops, both to make sallies and to retreat.

Our barricades always consisted of one straight line entirely closing the outlet, so that communication had to be carried on very inconveniently through the houses on each side. Altogether we were not adepts in the art of making good communications within works of fortification; doubtless, however, a very important art. The field-works of the French, which we had the opportunity of examining, after occupying the forts, were not faulty in those respects.

We may on some future occasion discuss and indicate the principles of investments, as far as they can be laid down for this sort of warfare. We confine ourselves now to mentioning the following as main points:—

1. A general tracing of the line of investment (this was planned and executed perfectly at both the sieges).

2. A special demarcation of the line of defence for the different sections and connection of the same with one another, subject to *modification*, which circumstances may afterwards render advisable.

3. The defensive works must in every way accommodate themselves to the ground and to the localities.

Excavated works, should the season be propitious, give the best shelter, and favour a nearer approach to the enemy's lines.

4. A good and economical organization of the guard-duties, and a suitable distribution of the troops.

5. A weak outpost position ; but the first line of defence to be in itself strong, and moreover prepared, so as to be capable of resistance.

To promote the quick construction of field-works, it is desirable that light spades should be added to the entrenching tools in possession of the troops.

In order to instruct engineer officers in tactics, it would appear advisable to attach them to infantry for some weeks in summer in the same manner, only on a larger scale, as they are now attached to pioneer battalions. It is further desirable that the latter should take a larger share in our field manœuvres, and that detachments of them should be furnished to commands of the other arms. Although in peace time one cannot thoroughly practise the construction of fortifications, one may yet plan them, and indicate the works necessary for their completion which would actually be executed on service.

VI.

TACTICAL PRINCIPLES AND HANDLING OF TROOPS—THE CHARACTER OF MODERN BATTLE AND COMBINATION OF THE THREE ARMS—THE TRAINING OF INFANTRY FOR BATTLE.

WHILST during the first thirty years after the great conflicts at the beginning of this century, the theory of war was discussed from various points of view with great acuteness and completeness, a description of writings followed, chiefly treating of the technicalities of the different arms and of tactical details.

These latter writings were not infrequently feeble abridgments of the world renowned works which preceded them, and which, as it were, they applied to specialties. They contained theories and precepts upon tactical trifles, things which in real work generally go to the wall, the object in view and the exigencies of the moment ruling in their place.

Defective experience in war was very noticeable in many of these writings.

After 1859, the first great active campaign of the present day, still more after 1866, military literature received a new impulse, because those wars had furnished valuable lessons; how much more may this be said after 1870–71.

It is encouraging to remark that this literature has taken a really practical turn, for we hold it to be quite unprofitable to found any more great institutes for instruction in the *theory* of war. This may perhaps be advisable a good many years hence with regard to strategy after matters have been cleared up.

The case is different with regard to the more practical conditions of tactics.

Changes therein have been working their way little by little, but have been brought so clearly to light by the wars of 1866 and of 1870–71, that we may clearly discern, as we are firmly convinced, the characteristic features of the warfare of the present day.

The saying 'new arms, old tactics' was, with reference to infantry and cavalry, only a 'bon mot,' and even with regard to artillery it is only partially true. Here then is a field of enquiry, in which labour may even now be profitable.

Since 1808 the main strength of the Prussian Army lay in the combination of science with practical knowledge. The younger officers, of course not without exceptions, studied military history, formed their opinions on tactical and strategical matters, and led their sections into the alignment, and to skirmish with equal skill. From this school arose the elder leaders of our host. In the same school also our younger chiefs were formed. The fresh, youthful intellects which during the last twenty years have been the element of progress in the Prussian Army have, without advocating radical measures and rash advance, laboured hard against the establishment of any cut-and-dried system of action in war, or in any other military matter.

Thus for some time past a tendency has been manifest in the Prussian Army to regard and teach the art of war from a purely practical point of view, in opposition to the assertion of abstract theories and of precepts held to be absolutely applicable to all cases.

The situations in war, it is urged, are of so various a nature, the contrast between what you are taught to do and what you actually do on service is often so striking, conduct which is perfectly right at some one time and place is often so injudicious at another time and place, that you must altogether desist from making rules which are every moment liable to be set aside and

broken. You should first of all therefore study military history, map in hand.

But this is not enough. The constant solution of practical problems on the map with supposed numbers is the study which enables a man to acquire method in the leading of troops, to feel at home in the most diverse situations, and thus to form the qualities which render him capable, when on active service, of doing the right thing with ease, at least as far as concerns the dispositions for action.

Shortly before the war of 1870 a book[1] began to appear, in which a body of troops of fixed strength is led through all the possible situations of war in a very clear manner, comprehensible to anyone, and very well adapted to private study. This book shows how the corps commander and his subordinates meet the difficulties which they encounter, and thus teaches us how to meet them—a work (let us hope that it will be completed) calculated to make common property of knowledge which has long been at the disposal of the staff officer. The solution of such problems in military schools is nothing new but the proposal to use them in the more general way is something new, and may have the best results.

This system is practically employed at all manœuvres. But, as is remarked in the introduction to the work in question, many of our manœuvres are on too small a scale to present a sufficient field for problems of war on a large scale. This mode of teaching is the best antidote to that peddling style which cramps the intellect.

If, however, anyone should wish to deduce from what we have said that theory itself, that is to say, the assertion of main principles of general applicability, must be set aside; or that study, that is, the storing of these principles in the memory, is

[1] The author appears here to refer to Colonel Verdy du Vernois' valuable 'Studies on the Art of Leading Troops' (*Studien über Truppen-Führung*), of which a second part was published this year.—TRANSLATOR.

useless, we cannot agree with him. If that were true, there would be no more room for tactical teaching. But from the sum total of the various lessons which every single military event brings before us, some grand principle of the art of war always comes forth like a conqueror.

The above-mentioned book gives to both tactics and strategy their scientific importance.

It does not deny that applied tactics are, to a certain extent, a good preparation for handling troops and for directing a fight. The direction of troops may depend upon one or more officers. Certainly, to become a good commander you must have method, whether you acquire it on the field of battle or in the solution of practical problems. But the art of handling troops does not consist only in the resolution of the commander to attack in this place or in that place, to march here or there, but also in having a good eye to country, in judging of the effect of the different arms, and in employing the formations which are adapted to both the country and the arms.

But it appears to us that the commander's decisions will also receive a beneficial influence if he has impressed upon his memory an intelligent comprehension of tactical rules ; and we are inclined to allow the instruction to be derived from them more wide-spread influence, than do the advocates of the views above cited. If one examines a number of situations such as are met with in war, one often finds the principles of tactics and of strategy in their practical application momentarily obscured to make way for a mode of action suited to the circumstances of the moment. Still, if we consider the well-directed operation as it develops itself in connection with the whole war, we shall always discover the existence of an endeavour to work out some principle or other (however free the commander's mind may be from making a hobby of any principle), not to mention the fact that in most cases we only set aside one tactical principle in order to govern our mode of action by another. When such action is complete, we may almost always recognize in the success of one side or in

the failure of the other side, that one of the grand principles of war has been followed by the one, neglected by the other.

With regard to setting problems by way of practice, we believe that whoever works them out practically, and in an instructive manner, will be just the man who has best taken in the lessons of theory, and that the scholar will be able to solve such problems with all the greater benefit to himself, the more accurately he has been grounded in the grand principles of generalship.

Theory, or, in other words, the establishment of principles, must go hand in hand with practice, or rather the former must be founded on the latter, on the experiences which modern war affords us. Let us seek an example to prove that some grand principle of generalship is constantly either being followed or set at nought. Take the principle—concentration of forces.

It may be alleged, that the Prussian armies were not concentrated in the victorious campaign of 1866, for they advanced into Bohemia in several columns. Benedek, on the contrary, moved in a state of concentration from Olmütz into Bohemia and was beaten. True, but when is it possible to apply a principle completely? Only where it is not in contradiction to the requirements of the place, and of attendant circumstances of all kinds. The geographical conformation of the theatre of war, and the question of supply, rendered a dispersion of the Prussian armies necessary. But was not the endeavour to concentrate evident? Was it not the main object of the forces pushing into Bohemia? Without doubt it was.

Benedek was tolerably well concentrated on June 27, but is it not clear that he at least contributed to his defeat by departing from the principle of concentration in launching the corps of Gablentz and Ramming separately against his enemies as they debouched from the passes?

We may therefore pronounce, with the same degree of truth, as we might propound the opposite theory: Benedek was beaten because he at the wrong time abandoned the principle of con-

centration, and the Prussians conquered because they understood how to apply it at the right moment, i.e. on July 3, 1866.

What we wish to show is, that the abandonment of the fundamental principles of military art in practice is more apparent than real, and that we may very well act contrary to them in particular instances, and yet may all along be labouring zealously to bring the state of things again into conformity with recognized precepts, or at any rate may do so very soon after the situation has passed by, which required the opposite mode of action.

These fundamental precepts must, however, be rightly understood; whoever adopts them must comprehend that they are intended to be adapted with elasticity to prevailing circumstances; one must act up to the living spirit, not to the dead letter.

If a commander does this, and if he knows that the secret of victory does not alone consist in rigidly following the precepts which have been instilled into him, but in acting up to them as circumstances and time demand, then will these principles be of practical assistance to him in all positions, contributing to give him that clearness of mind which is indispensably necessary to leadership in the field. But whilst we advocate attention to general principles in the field on the part of the commander, we do not thereby dissent from what we already said when we recognized the self-reliance of the German leaders, their power of acting according to the requirements of the moment, as an advantage and as a first law. This independence of action on the part of the individual commander is always an unconditional necessity in war (at one time in a greater, at another time in a less degree), in order that the simple principles of *art* may be applied. That leader who is thoroughly imbued with the maxims which have proved themselves suited to the times, and who understands how to adapt them skilfully each time to prevailing circumstances, will, in our opinion, always have the advantage over him who imagines that he has acquired, by practical experience alone, sufficient method to be able, through

the force of habit, as it were, to hit upon the right course in every case.

If certain fundamental maxims of the art of war, and more particularly of strategy, have remained the same from the earliest times down to the present day, tactics constantly change their aspect, and the art of handling troops depends absolutely upon tactical rules, according as the times require and bring them forth. Let us take a simple example: a general, endowed with every intellectual gift, making excellent dispositions, directing his troops with uncommon ability, wishes to ignore the effect of the breechloader, and attacks a point which he considers to be the key of the enemy's position in dense columns; he will fail, and will probably lose the battle. From this, however, it appears to follow, that there are principles which apply to particular periods, and which cannot be neglected with impunity. In any case a perfect acquaintance with the fundamental principles of tactics must go hand in hand with experience in handling troops. These two things so often mix themselves up together that it is very difficult, nay frequently impossible, to separate them. In every period, some fixed great principle of tactics crops out, obliging us to remodel our former maxims. Often one man, often the movement of a whole people, produces such a change.

Condé found the method of the cavalry charge to be a quiet advance at a walk, and first introduced the practice of getting over the last thirty paces at a gallop after the enemy had fired his volley; ninety years later we find Frederick the Great's Cavalry attacking only at full speed. On the other hand the change from line to skirmishing tactics was accomplished by the levies of the first French revolution. If then the grand and fundamental principles of the art of war are invariable, the principles of tactics, particularly the formations in which we fight, are not so by any means, and we may easily recognize, as far as the main points are concerned, which of these principles are altered, and which remain for the moment unchanged. If our

prescribed formations are not always adhered to in the battle-field, it is just because principles override the form.

To discover, or to know the formations most applicable to reality appears to us always to have been, and still to be, one of the principal tasks in the further development of tactics. We cannot here omit making some remarks upon the terms applied to some of the principal points of the art of war. We know that renowned authors have already striven to find a satisfactory definition of strategy and of tactics; and also that none have succeeded thoroughly in doing so. Do not fear that we are going to try whether we can manage better.

Not many officers are required to exercise strategy, but it is with tactics that most of us have to deal. Therefore let us say a few words upon the term tactics.

We find in our school books the expressions 'pure tactics' and 'applied tactics.' As our people have generally intelligence enough to attach a meaning to a word, we understand by 'pure tactics' simply the practice of formations for battle, as prescribed by regulation and by the instructions; 'applied tactics' we understand to consist in the *application* (hence the term) of these formations to all sorts of ground.

These two expressions denote again clearly the distinction made between 'battle-drill' and 'manœuvring,' which we have argued against in another place.

A difference is made between the two; whereas, since the introduction of skirmishing, no such distinction should be made.

Tactics should always be 'applied,' in our opinion; that is to say, advantage should be taken of the ground just as much at our ordinary 'battle-drills,' as at our field manœuvres.

If you have a level plain to work upon, the strict adherence to prescribed forms follows as a matter of course.

Constantly to apply tactics is one of the first deductions which we draw from 1870, and upon this maxim we found the following observations:

Let us first banish the distinction between 'pure' and

'applied' tactics, and let us divide them into 'great' and 'little' tactics.

By 'great' tactics we understand what has hitherto been called 'tactics of the three arms combined;' by 'little' tactics we mean the mode of fighting and the practice of the battle formations of each individual arm, from the smallest body up to the tactical unit.

(The objection that, according to this, a lieutenant with twenty foot soldiers and two horsemen would practise 'great' tactics, may with confidence be dismissed into the region of nonsense.)

With regard to the combined action of the three arms in 1870, the most severe critic can, on the whole, have but little fault to find on the German side. We Germans did not altogether resemble the celebrated mules characterized by Frederick the Great as animals which had served twenty campaigns under the great Eugene without having learnt anything, for we had reflected upon 1866, and that year had taught us something.

Where no great blots are visible, what is the good of looking up trifles? Only those who have something positive to say about everything would do so.

We have, therefore, but little to say about the manner in which it is desirable that 'great' tactics should be treated in future. We wish to confine ourselves to describing the general character of the battles of the present day, and to pointing out the peculiarities by which they may be distinguished from the battles of the Napoleonic era, through which comparison the principles of the regular mode of conducting troops in action reveal themselves almost spontaneously.

In the eighteenth century the long extended and immovable formation of troops in order of battle greatly assisted a general of superior talent in gaining victory with inferior numbers. This is especially remarkable in the battles of Frederick the Great.

The strategy and tactics developed by the great Revolution

and by Napoleon I. had, as their consequence, after the general adoption of their principles, that, on the whole, victory was dependent on the relative strength of the forces opposed to one another, the degree of success obtained being always, however, greatly dependent on the genius and art of the commander. We must except the cases where the troops opposed to one another are of unequal qualities, or where the armament of one side is greatly superior to that of the other. When the armament and quality of the contending armies are equally good, the more intelligent leadership will assert its rights. But it will rarely happen that the condition of both sides will be quite equal in the points referred to.

In the wars of the Revolution and of Napoleon I. there were many cases on both sides in which inferior numbers gained decisive advantages. Now, since the introduction of breech-loaders, the chance of attacking with inferior numbers successfully, even supposing superior generalship on the side of the assailant, has been reduced to a minimum, if the troops are of equal quality, because the direct attack being beset with immense difficulties, can hardly ever succeed at once, and generally resolves itself into a long, stationary, or slowly progressive musketry engagement. Hence ensues the necessity for a turning movement, which however, as a rule, is only practicable for a superior force.

Great tactical attacks will, therefore, take the form of turning movements, as was the case at Gravelotte and at Sedan, which movements we may confidently consider to be as much characteristic of the battles of these times, as the practice of breaking through the centre was characteristic of Napoleon I.'s battles. The nature of the country plays in our battles as great, if not a greater, part than it did sixty years ago. We should act now, as formerly, with regard to obtaining possession of important points. The contest for such points will perhaps, after the assailant has succeeded in taking them, exert a more decisive influence, because modern artillery can command a greater

portion of the battle-field, and the recovery of such positions once taken is more difficult than it used to be. Let us consider the usual course of a battle.

We open it in the same manner as was done in the time of the first empire. Heavy artillery fire and the struggles of infantry for some advanced posts commence the action. Then the artillery fire increases in intensity. Now begins the difference. Whilst now-a-days the assailant engages his infantry partially in front so as to hold the enemy fast, and thus to occupy him, he directs the corps previously told off for the purpose on the wing which he intends to turn. His cavalry has retired behind the line of battle, or has spread itself on the wings of the attacking army, or else, under certain circumstances, keeps at some distance from the enemy and fills up gaps between separate army corps. In Napoleon's battles the infantry columns of attack would at this moment be put in movement, and, after the artillery had prepared the way sufficiently, would proceed to the direct assault of some point or other, it might be in the centre or in front of a wing.

(We know quite well that Napoleon I. sometimes attacked by turning a flank, but it was rarely necessary for him to spin it out as long as we must now do; indeed, this sort of manœuvre was not often practised by him. But if he were now at the head of an army, he too would relinquish the direct attack.)

Cavalry, which in those days was generally engaged in the course of the action, was at times employed to aid in this massive blow upon the part of the enemy's line to be broken through, which was generally the centre.

The actual attack would then be made by the infantry with the bayonet after a little skirmishing. But a long fight with varying success would take place for localities, during which both sides often used up their reserves. Villages would now and then be taken and retaken four or five times.

Things are carried on differently now. After the turning movement is sufficiently pronounced for the troops executing it to

wheel up, a way for the attack is first opened by a fearful cannonade. The infantry then moves forward in dense clouds of skirmishers followed by little supports (very different to the massive brigade and division columns which came into use particularly towards the end of the Napoleonic era), and gains ground slowly. If the attack has not been suitably prepared, or if it is unskilfully executed, it may fail, and meantime night comes on, the battle remaining undecided, even if the assailant have a great superiority in numbers. If a position is at length carried, the retreat of the defenders is so harassed by the rapid fire of the enemy, that the defeat is generally much more complete than it would have been under similar circumstances sixty years ago. The cavalry has perhaps had the opportunity of making some isolated charges, or it may have been sacrificed in the hour of need as at Vionville ; but it will generally remain, as at Gravelotte and Sedan, behind the line of battle. Reserves play the same part as in former times, with this difference, that we are obliged to keep them further back, and in consequence they are sometimes unable to come into action at the right moment. The pursuit is still carried on by cavalry with a strong force of light artillery, as in the time of Napoleon; but even here the power of cavalry is much restricted, as infantry, even if defeated and dispersed, still possesses great power of resistance against it. When acting on the defensive now-a-days we must endeavour to occupy the first line in force, and to hold it at all hazards.

Reserves are, if possible, placed in rear of the wings, to provide against turning movements.

Reconnoitring parties should be sent to a distance from both flanks, so as to discover these attempts as soon as possible.

The difference between a battle of sixty years back with Napoleon as our supposed adversary and one of the present day, in which we imagine the Germans to be the assailants, is very clear. It arises from the effects of fire, particularly of breech-loaders and rifled guns. From this also proceed the altered

tactics both of cavalry and infantry; hence again a different employment of these arms by the general.

So much for battles of the present day and of the immediate future.

Our artillery and cavalry tactics in 1870 were almost faultless. Their elementary formations have been subject to fewer alterations in the last century than have those of the infantry, which have gone through wonderful changes.

Elementary forms are of less importance in the employment of artillery and cavalry than in that of infantry. With good materials, the right spirit and judgment, it does not so much matter about the form. Yet we must say a few words about the tactical formation of cavalry in battle.

The power of the latter arm on the field of battle has, we think, been proved to be slight.

And we cannot agree with those who think that it would obtain greater success if supported immediately by infantry. The movements of the latter are far too slow to be able to take quick advantage of any momentarily important stroke of the cavalry. Quitting its position, as it must, to follow the cavalry attack, it would be more likely to expose itself to a serious check, than at the right moment to penetrate into the gap made by the horsemen. Circumstances which would justify us in launching great masses of cavalry at any hazard against the enemy's lines, can only occur very rarely. Every cavalry charge demands evidently, above all, fairly open ground. If the enemy's position is of any natural strength, or if, when in the plain, it is covered by rifle pits and slight entrenchments, an attack upon it by cavalry, should the defenders be firm, would be a very difficult operation.

And indeed one can hardly imagine circumstances in which such an attack would be likely to succeed. The only moment at all promising is when beaten infantry is retiring.

A charge made for the purpose of affording breathing time to

one's own infantry by bringing the advancing foe to a stand-still, is a heroic and not useless sacrifice, for instance Vionville. In all cases, however, the form in which we attack is important.

Prussian cavalry has for a long time adopted the echelon form of attack. The principle is correct, for the squadrons follow one another at intervals, one drawing the fire, the next breaking in. But the present firearms are so quickly loaded that there is really no cessation of fire. You may, however, mislead infantry into delivering its fire with precipitation and want of regularity.

The attack in skirmishing order seems to us here preferable to that of compact squadrons.

Thus we will imagine the charge of a cavalry regiment to be executed as follows: two squadrons in extended order throw themselves upon the infantry; two following at a trot, about 300 paces in rear.

The leading squadrons rush on, perhaps riding through the enemy's skirmishers and wheeling off before his masses, or galloping past them.

The officer commanding the two squadrons in close order, who with his trumpeter accompanies those in advance until pretty close to the enemy's infantry, sounds the gallop for his own squadrons as soon as those in front have felt the first effective fire, and makes his charge.

This plan may be the most likely to induce the enemy's infantry to blaze away in a hurry, thus affording greater chances of success to the real charge which follows. We repeat, it *may* have this effect, but we are far from setting it forth as an absolutely certain recipe for restoring to cavalry its old power in battle. At all events this appears to us to be the best method, particularly as the horsemen in extended order would suffer less than if they were in compact bodies.

Against artillery alone cavalry has now at least as good a chance as it ever had. If it can get quickly over the interval between 2,500 and 1,500 paces, so as then to push forward rapidly

upon the guns, the latter are in an awkward position, because they have no longer the advantage of the effective grazing fire of case shot from the smooth bore. At long ranges cavalry will suffer more from rifled guns than they formerly did from smooth bores, but at short distances they have their revenge.

It would be presumption on our part to suggest improvement to the artillery, which proved itself capable of such deeds as did that of the 9th Corps at Vionville, of the guards at St. Privat, of the cavalry Division Rheinhaben at Vionville, of the 5th, 11th Corps, and Saxons at Sedan, &c. &c. Not but what there might be room for improvement everywhere, but at present we cannot imagine a better application of artillery than was actually made.[1]

With regard to the infantry we will not say that their tactics did not bear comparison with those of the other arms, but their task was generally much more difficult; as their enormous losses show. Their mental and bodily faculties were subject to such a strain in action that it was more difficult for them than for the other arms to preserve tactical formations and to keep together. Infantry continues to be, we have already said it, the decisive arm. To it both our deductions and our suggestions for tactical training chiefly refer.

Great clouds of skirmishers and small tactical units, that is the form for infantry. 1859 and 1866 already showed the truth of this axiom as applied to active operations on a large scale; 1870 has confirmed it; nay, it has even proved that the action of breechloader against breechloader has increased the employment of skirmishers in action.

All idea of attacking with large compact masses, or of drawing them up in line to fire upon one another, is finally exploded.

[1] For what we have to say on this subject, see Chapter V.

The real secret of infantry fighting, speaking in general terms, now consists in so regulating and controlling the independent action of the individual soldier, and of the leaders of a tactical unit, as to facilitate, as far as may be, the direction of the fight, without losing the advantages of that same independent self-reliance.

The frightful effects of our firearms necessitates dispersion. We have seen how whole battalions, regiments, and brigades fought as skirmishers in the great battles. One might well think that we are returning to the mode of combat of savages, who, fighting without any regular order, rush in swarms upon the enemy, wishing to come as quickly as possible to single combat.

In any case we must confess, that such a dispersion of the combatants does not contribute to our control over the fight, nor to its quick conclusion. But we are convinced that, in face of breechloaders, it is impossible to prevent this swaying to and fro, this partial dispersion and mixing up of corps.

That these swarms of men were to some extent under control, we have to thank the intelligence of the soldier, the excellence of the officer, and the constant practice of our infantry in fighting in small tactical units.

At all times, however, it has been advantageous to fight in as good order as possible; in fact, the doing so has given an additional chance of success. The great task of our tactical training should then be to enable us to retain an easy control over our men, notwithstanding the state of dispersion into which infantry will inevitably fall at many periods of an engagement. The fighting formation for our infantry is that of a cloud of skirmishers. We must render them controllable in action. The knowledge of the weak point in our manner of fighting does not date from to-day, and many people have sought to discover a remedy for it.

When the line of skirmishers was divided as much as possible into sections and groups, this was one step in the right direction,

but insufficient. Another good move was to maintain or increase the strictness of discipline for troops drilling in close order. The two measures, even taken together, are insufficient; the line of skirmishers breaks up, gets mixed with other troops in action, and its subdivision no longer exists. The strictest drill does not make troops capable of fighting in a practical manner, when skirmishing in large numbers, and of manœuvring in extended order. We shall never arrive, by the most severe course of field exercise in close order, at enforcing the discipline in battle which is required in the skirmishing combats of the present day, however necessary that drill may be for the movements of troops out of battle, and also at particular periods of the engagement itself; for instance, when marching up into line, or for whole brigades when manœuvring under artillery fire.

The way to arrive at creating this 'battle-discipline' is to take great pains with the individual instruction of the soldier and to practise extended order fighting in a larger and more varied manner.

We will now state a few words of what we mean by the individual training of the soldier for battle.

We must impress upon the young soldier what is really the truth, that the principal formation for battle is that of skirmishers. He must be told that this formation is equally adapted to attack, to defence, in short to every stage of the combat; that he will very rarely fight in close order; that extended order is the rule, close order the exception. (As yet, nothwithstanding all our experience, the contrary is taught both in our drill instructions and on the exercise ground.)

It is customary to tell the soldier a pretty long story about the personal qualities required of the sharpshooter. The bump of locality, acuteness, decision are mentioned, but one hears little of the steadiness, the attention the obedience to signals and orders, so requisite in the light infantry soldier.

As long as thin lines of skirmishers sufficed, and compact masses were expected to give the decisive stroke; as long as

skirmishing fire served to detain and occupy the enemy, so as, in some measure, to pave the way for the advance of the battalion, it was allowable to dwell principally upon the first-named qualities; but now that, with very few exceptions, the swarm of skirmishers is really the only serviceable fighting formation, we must at least set as much store by the discipline required of the light infantry soldier, without which such swarms of skirmishers as are now necessary in battle cannot be manageable. We do not give the young soldier from the first, the idea of the importance of skirmishers in action, which they really merit. To carry on a great skirmishing action, the very strictest discipline is needed. Sufficient importance is not attached to creating this discipline. Most corps still begin training recruits to work in close order, without at the same time beginning their instruction in light infantry drill.

The gymnastic instruction which the recruit at once commences, does not repair this omission; it only serves to develop the bodily powers of the young soldier, and does not directly contribute towards making him a good skirmisher. If we do not commence the soldier's training as a skirmisher at the same time as his ordinary drill, the first lessons in the former impress themselves upon him as a relaxation of discipline; he finds himself suddenly relieved from the constraint to which he is subject in the ranks, and this is the beginning of the wrong course so often given to his training.

Practice from the very first in the formation of skirmishers on level ground, afterwards on broken, undulating, enclosed ground, whatever may be at hand, appears to us to be the readiest method of making the young soldier acquainted with the manner in which we principally fight. This instruction should be accompanied by information imparted by the officers, on the vicissitudes and varying impressions of a great fight of skirmishers; certain good maxims must daily be repeated to the recruit, as for instance, that if once he should undertake an attack, he must never pause or waver, the consequence of such

conduct being disaster and death; that if the enemy attacks, all he has to do is not to run away, but to lie still and blaze away as hard as possible; that the best way to meet a sudden assault which may produce a panic, is by a hearty hurrah and a charge; and so on.

The training of the individual in taking advantage of ground begins, in this manner, at the very commencement of his service. He should at the same time, of course, be learning the use of his arms, and developing his physical courage by gymnastic exercises. Theoretical instruction upon his different duties should not be imparted in too dry a manner, and should be divested of the pedantic formal character which such instruction still occasionally assumes to an awful extent. Themes should be set only to officers, or to unusually well instructed non-commissioned officers; field duties being the first subject. Whatever is taught theoretically should be invariably carried out in practice.

In addition to these things, we should not forget to excite the feeling of military honour in our soldiers by narratives of the great deeds of their brothers and fathers; not stories after 'Starost's' fashion of the Fusiliers Schulze and Müller; but short, simple, and precise accounts of the principal events of the war, illustrated by a few touches on the black board, accounts in which our national heroes of 1866, 1870, and 1871 should occupy front places.

(Many will perhaps say, 'How many of the men will not understand you!' But if only a quarter of them understand, that will do, for this quarter will leaven the whole lump.)

The strict Prussian training in close order drill would meanwhile pursue its course, giving firmness to the bearing of the soldier, and accustoming him to order and discipline.

We think that we have hereby explained what we understand by cultivating the personal qualities of the soldier for fighting in extended order; qualities which will tend to create the discipline necessary for our great skirmishing battles.

But this is not all we have to do.

At the very first skirmishing drills we shall do well not to confine ourselves to practising prescribed forms. On an open plain, tactics and regulation are agreed. 'Pure' and 'applied' tactics are in unison. But should we meet with the smallest accidents of ground which can be taken advantage of, we must never leave them disregarded. This will not of itself prejudice the practice of prescribed forms.

For instance, we may practise the 'rally' just as well after having pushed our skirmishers fifty paces to the front, so as to get cover from an undulation of the ground, as if we kept them standing up fifty paces from this cover. In one word, we should from the first make no difference between skirmishing on the drill ground and skirmishing across country. It is of course not necessary to pick out a piece of broken ground for your first lessons to the recruit in extending, in the various movements of a line of skirmishers and in closing.

As we have before remarked, we should first select level ground for our drill, but very soon a broken country. In this way, we think, young soldiers will become such adepts in taking advantage of the ground that, when they come to the greater drills, they will give us but little trouble in this respect, so that we shall be able to devote all our attention to the control, direction, and cohesion of the great clouds of skirmishers and to their discipline in battle. We shall be in a position to fight with much more order in enclosed or broken ground.

It cannot be denied that much has been done during the last twenty or thirty years in training infantry to take advantage of ground, but we should find this much easier to do if we always conducted our fighting drill in the same manner as it is carried out at the field manœuvres, if we used no battle formations at drill which we should not dream of employing in reality; in a word, if we gave up 'pure' tactics and stuck to 'applied' tactics.

We have, since 1854, divided our line of skirmishers into groups, setting forth that we do so because we wish,

1. To control the fire by officers and non-commissioned officers.

2. To prevent the men of different corps from getting intermingled.

These principles are doubtless quite right in theory; they are right and will remain so, although there is a very great difference between the fire of great swarms of men armed with breech-loaders as we now find them, and that of weaker lines of skirmishers armed with the muzzle-loader.

But, as we have seen, the fight turns out so often quite different in practice, corps get mixed up together so frequently in dense clouds of skirmishers without our being able to avoid it, that it is utterly impossible to maintain the subdivision of the line; and we believe that the very fact of the men being accustomed to this subdivision, produces a very prejudicial effect upon them in such moments of disorder. The soldier finds himself beyond control of his immediate superior; he sees men of other regiments about him, and the bands of association and of discipline are all the more weakened, as he has been accustomed to something quite different at drill. It does not follow from the above, that we should reject the subdivision of our skirmishers into sections and groups, but only that, at drill, we should not make a practice of drawing up quite fresh sections near those already placed; but rather that we should not hesitate to mix them up with the old skirmishers, which is often the only possible course under fire. Nay, it is even necessary to drill sometimes with skirmishers composed of men from different battalions intermingled, so as to accustom men to that sort of thing, and to keep them under control and serviceable. Soldiers who when fighting in extended order only remain under their leader's control when they are in their usual formation, appear to us to resemble men who, when drilling in close order, can only perform the simplest company or

battalion movements, and are quite abroad if inverted or wheeled rear rank in front.

And it is precisely in skirmishing, in which, according to the nature of the thing, there must necessarily be more pellmell work (so to say), that we stick to this system of subdivision, and then are astonished that a good deal of confusion arises on actual service.

Let us therefore practise skirmishing in masses composed of a perfect medley of men as much and as often as we practise light infantry drill with its regular subdivisions.

Let us keep up the latter on actual service if we can. It will not, however, be always possible to do so; and, for that reason, we must strive to make the hotchpotch of skirmishers also manageable. If, during field manœuvres, a little unsteadiness and turmoil are noticeable, it is usual to find great fault. This does not appear judicious. The commander should first remark, how officers and men conduct themselves in this medley; whether they are trying to attain the object aimed at; and, lastly, how the intermixture arose, before blame is awarded. We hold that, at drill, corps should be frequently and purposely mixed together in the line of skirmishers when practising battle movements against an imaginary enemy; whilst, at field manœuvres, this will take place of its own accord pretty often, when it should be borne with as long as it would have to be endured on service in a similar situation. This does not of course prevent our re-establishing tactical order, and the tactical connection of the men as soon as it is possible and compatible with the state of affairs.

In order to work with tolerable readiness in such lines of skirmishers as we meet with now-a-days in battle, a man should have gone through something like it in peace time. He should have gained as good an idea of the sort of thing as possible; he should not merely know by hearsay, but experience in his own person, that, if separated from his own company and unable to rejoin it, he at once comes under command of the officer who may happen to be where he is; he should be prepared to feel

quickly at home amongst new comrades. An officer, on the other hand, whenever he sees stray soldiers in action, should take them under his command, either forming them into a compact body, or leading them on into the line of skirmishers.

Such cases have been of frequent occurrence in modern campaigns. At Wörth we saw supports in which almost every regiment of the Prussian 11th and 5th Corps was represented. Doubtless it will be objected to us that, by conducting our drill as we have recommended, we shall be to some extent giving our sanction to disorder, thereby producing still greater confusion; but this objection will only be made by those who have not much reflected upon the requirements of the warfare of the present day. Since 1866 we have been trying our best to do away with this disorder, this confusion, yet in 1870, though we conquered gloriously in all the great battles, it was worse than ever.

We must then still carry on our strict drill, our good system of manœuvring in company columns, but we must do something more. Infantry must be accustomed to manœuvre with greater cohesion and rapidity than before, when men of different corps are jumbled up together, in spite of this medley, and thus to perform difficult tasks under unfavourable conditions.

As yet there is no infantry in the world capable of doing this. If we succeed in perfecting ourselves in these great skirmishing tactics of the masses, we shall retain the same preponderance which we before gained by our system of fighting in company columns.

We do not give up the principle of keeping up the tactical connection as much as possible, but we desire at the same time to carry out our movements and manœuvres with a thoroughly mixed line of skirmishers; that is to say, to practise disorder, so that, when reduced to that condition, we may be able to move and to fight.

For the last sixty years we have, fortunately for us, held to our field manœuvres. Everyone now admits, that it was owing

to them that our officers and soldiers gained during the long peace an impression, as far as possible correct, of war, and an approximate acquaintance with the actual hardships of warfare, and with the art of making themselves at home in a strange country and in a poor bivouac.

Our 'sham fights,' as they are called out of Germany, have lately been imitated in Austria and England. The suggestions here made are only calculated to continue and further develop this system of giving as accurate a picture as possible of war.

Our drill exercises must above all be conducted with this view.

It has been already pointed out in Chapter IV., that it becomes at times absolutely necessary to mix up reinforcements with the skirmishers already extended, when we require an increase of fire upon a certain point, and when the ground does not favour us in placing our reinforcements on either flank of the line, or if there is only one way by which they can be brought up to the front tolerably under cover.

Hence arises without doubt, the frequent intermingling in battle of sections, companies, and battalions. This cannot be prevented.

But how can we hope to manœuvre satisfactorily with such a mixed body of skirmishers, if this state of things is quite a novelty to the men? Therefore we repeat—we must have practice in disorder.

Our rules hitherto in peace, for the movement of great swarms of skirmishers, pay too little attention to far-extended movements, which have to be carried out with cohesion and decision, though with due regard to the ground. This is always treated as a thing which goes on of itself; yet how often, after a few hundred paces, is all connection lost in the line of skirmishers!

We must be very particular about these drills. A directing point should be given to the skirmishers, then altered so as to practise changes of direction. This should be done, not once, but five or six times a day during the drill of a battalion, regi-

ment, or brigade: thus alone can we pay proper attention to the movement of the principal agent in modern battle, namely, the line of skirmishers.

At present it is considered sufficient at brigade drills, to send out skirmishers some hundred paces to the front, to halt them, and then to make the support double up and fire impossible volleys. This is no longer war.

A movement generally in disrepute for skirmishers is that of changes of front, yet it is very useful and more often practised on service than is supposed. We have not so frequently to wheel the quarter circle, as the eighth of a circle. Such wheels will generally be required beyond effective rifle range. For instance, we advance in a certain direction, and having arrived at within 800 paces of the enemy, discover that we have taken a wrong line and must therefore change front. During the actual engagement, also, changes of front became suddenly necessary, when in woods, or in broken ground, the enemy often appears unexpectedly upon our flank, and usually creates a panic in the wing which is being turned, unless we succeed at once in changing our front, at least partially, towards the threatened point. Many such cases are known to us in the campaign of 1866 and 1870–71. It is easy to say, the cavalry should prevent surprise. But the cavalry cannot ride about within a few hundred yards of the enemy and under his rifle fire. If that were possible you would not see infantry mounted officers dismount.

After drills with skirmishers of different tactical units mixed together, the subject of next importance is the more careful practice of movements in great clouds of skirmishers, and the more exact performance of these movements. The possible objection that we wish to convert the movements of skirmishers into mere drill movements, that we are advocating the old system of so-called 'line skirmishing,' does not affect us, as what we have said at the beginning of this chapter proves that we wish to practise the art of taking advantage of ground from the very first most assiduously.

All such great movements of skirmishers will of course be executed with due regard to the nature of the ground, of which the men must take advantage independently, without reference to the alignment, the general direction only being preserved. It is neither necessary nor even desirable, still less possible, to be constantly watching over your men in the line of skirmishers. Enough if you teach them to perform the principal simple movements which serve to carry on an action. These are, we may say, the general advance ; the change of direction to the *march*, or to the *fight* (a better expression), the wheel, the rally, the sudden commencement or cessation of fire, &c. &c.

The help of bugle sounds will be necessary for all these movements, although their employment will be much restricted.

Every officer should be ordered, hitherto he has only been permitted, to carry a signal whistle. Its shrill penetrating sound is audible amidst the rattle of breechloaders.

Finally, we consider the banishment of all impossible and artificial formations from our drill and drill regulations to be necessary.

Anyone who has read the foregoing with attention will know what these are without being told.

We will recapitulate.

What we oppose is the employment of close order fighting formations on the drill ground and on the field of manœuvre to an extent unsuitable to present circumstances. Latterly the authorities have sanctioned some alterations in infantry regulations which have effected a great improvement. Both in the double columns of half-companies and in line, each company of the battalion has its section of skirmishers close behind it. If skirmishers advance, they are supported by their own company which under its chief follows their movements. Thus, as soon as 'battle drill' begins, battalion movements are immediately abandoned for the company column system. But even so, we may adhere too long to fighting in close order, and such is really

the case with us on the drill ground, quite in opposition to the nature of actual warfare.

Besides company columns, however, we have retained the method of attacking in double column of half companies, called also column of attack, although it cannot contribute to the attack ; also the advance in line and the practice of firing battalion or half battalion volleys.

We will not assert that these things have become absolutely impossible in war, for its situations are so varied that one can never tell for certain ; but whoever has fought through one campaign in these later days, will agree with us that the employment of such means will be very exceptional indeed.

That the double column is adapted to the deployment, and to the marching into line of large masses of troops, we will admit, but it will never do for the actual attack ; in order to use it in that way, a battalion must be so taken by surprise, that it sees the enemy appear quite close in front of it without having time to deploy.

A commander who knows his business will not drill his men long at this sort of thing, but proceed as soon as possible to the company column fight.

But we have not yet done with this sort of mischief. If a half-battalion advances in close order to the attack, or deploys to deliver volleys under fire of the enemy's skirmishers, the act is just as impracticable and mischievous as would be the attack in double column.

When the half-battalion deploys, each half-company moves regularly up into line in close order to fire volleys.[1]

Such a manœuvre can only be possible if

1. These parties in close order can move up into line under cover.

2. If there is cover in the alignment itself, and even then there will be great difficulties. Are these rare exceptions

[1] We have already shown that volleys are hardly ever fired in action in the field.

sufficient reasons, we must ask, for representing this sort of manœuvre as quite common, and for practising it at least eight or ten times at one drill? Volleys should never be practised on the drill ground; that is to say, on the level plain; for there they are impossible. If they are to be practised at all, let that be done on ground suited to the purpose, so as to give young officers and soldiers a true, rather than a totally false, picture of how battles are fought. One often hears people say: It is quite true that this volley firing is unnatural, but it does not do any harm; it serves to mark the reinforcement of the line, only it is done rather too much as if on parade. Whether it does any harm or not, we may find out, by carefully watching our small field manœuvres, when you will frequently see supports standing up within effective range of the enemy's skirmishers and delivering volleys. But these things are not at their worst with us. They were much worse with the French, and perhaps are so elsewhere. If, however, we wish to retain our superiority, let us be consistent; let us reject all formations which are no longer available in real fighting; and let us above all accept as a maxim, that all field exercise, every field manœuvre, should, as far as possible, be a representation of real battle. That is what we understand by the suggestion, always to practise 'applied' tactics.

Let us now enquire, when close order may yet be employed in battle with advantage?

1. When marching up to the scene of action.
2. When deploying for action.
3. In movements under artillery fire, and even under rifle fire at very long ranges.
4. In advancing to the attack, open order is combined with close order.
5. In exceptional cases, such as surprises, at night or in thick fog; whenever the enemy appears suddenly before us, so as to prevent us from at once extending and making proper use of our skirmishers. Lastly, when there is a positive want of space for extension.

Moments such as these last will only be of very short duration, and probably the side which succeeds in first delivering its fire will at once gain a decided advantage. In all the other situations of battle, both offensive and defensive, extended order is the rule.

Supports, large or small, are only available for following up and strengthening the line of skirmishers, for backing them up, and, when on the defensive, for making a counter attack. The question of the right employment of supports is one of the most difficult in infantry combat, like that of reserves, in the general direction of an army in battle.

With our former armament, smooth-bores or muzzle-loaders, it was almost wholly to our advantage that supports should be kept as near as possible to the line of skirmishers. They did not suffer severely from the enemy's fire; their loss was, indeed, at times smaller than if kept at a greater distance, because most muzzle-loaders had a high trajectory, and their proximity to the skirmishers was all the more necessary that the fire of the latter was so much weaker than it now is.

The enemy's skirmishers were usually compelled to retire by a vigorous decided attack; and, if the supports were not close at hand, the assailants would soon be checked. Now the case is different. A strong line of skirmishers (and it is useless now-a-days to come on except in force) has in itself the means of repulsing every front attack, providing they use their fire properly and retain their coolness.

The supports may, therefore, afford to keep further back. Their principal task is to back up the skirmishers, either by reinforcing them, or by endeavouring to meet any flank attack of the enemy. If, however, the line of skirmishers gives way, they may then make a counter attack with beat of drum and a cheer, extending at the same time however part of their men. When, on the offensive, they should press on after the skirmishers, but not into line with them.

If we keep our supports very close to the skirmishers, we

expose ourselves to the temptation of breaking them up; indeed, very frequently, the enemy's hail of bullets will cause them to disperse and force them to join the skirmishers. The interval between supports and skirmishers must thus, under present circumstances, be considerably greater than it used to be. But we do not profess to lay down a rule of universal application; the ground has much to do with it. If we can bring the supports to the front and post them there under cover at certain moments, for instance, before commencing our own attack, or before an attack by the enemy, we shall often gain an advantage.

But imagine the fight to take place on a plain; we must then keep our supports at least 400 or 500 paces from the skirmishers, even if we make them lie down. In the matter of supports, we should approach the method practised in actual conflict as established by former experience, and regulate our drills accordingly.

If we act according to the principles above advocated, it is evident that we may omit many things now practised by infantry, and, on the other hand, work out more thoroughly what is really important and constantly useful. Our drill will thus become really more simple; it will present, perhaps, fewer pretty pictures; such as supports coming up at a 'steady double' into the line of skirmishers, or half-battalions advancing in close order and deploying with successive volleys; but it will be more like war, and more natural.

We will try to render clearly our views of field exercise on a plain, by comparing the evolutions of a battalion according to the method hitherto in force, with those of another drilled according to the principles laid down by us. We shall indicate the former by the letter A, the latter by the letter B.

A.

1. Nos. 1 and 4 companies to the front. One section of each will skirmish. Supports about 150 paces in rear:

2. Supports to the front; they advance and fire volleys:

3. The half-battalion pushes through the front line joining the skirmishers. The attack succeeds:

4. The two companies first sent out close:

5. The half-battalion forms up firing volleys on the retreating enemy.

B.

1. No. 1 company to the front. Entirely extended. No. 4 company as support, 400 paces to the rear:

2. No. 4 company turns half-right, extends one section to the flank forward (to indicate that wherever possible we should threaten the enemy's flank):

3. Advance by a succession of rushes, doubling forward a hundred paces at a time, then lying down again; a section of No. 4 reinforces the skirmishers:

4. The half-battalion divides itself, one company in rear of centre, the other overlapping the right:

5. The skirmishers rush on followed by the section of No. 4, which has hitherto remained in close order:

6. The two remaining companies in close order follow with beat of drum, 300 paces in rear. The attack succeeds. Skirmishers halt and keep up a rapid independent fire on the retreating enemy.

We wish it to be expressly understood, that we are not here giving a plan for a drill. Our intention is only to show, by this simple example, how even on the drill ground we may, in opposition to forms hitherto in force, give to fighting in extended order the importance which it deserves, and which we must allow it sooner or later, if we do not oppose ourselves to the principles acted up to in battle and, by the Prussian army, even in field manœuvres.

The difference between the two above cited examples of field exercise may be discovered with little trouble. You avoid mixing up bits of different companies in the line of skirmishers.

This method is in itself faulty, for although we propose practising movements of a medley of skirmishers, we only wish thereby to meet an unavoidable evil which generally presents itself in the course of an action. At the first start, it is always advisable to keep tactical units as distinct as possible. How often it happens, during a long advance of a line of skirmishers, made up of sections of different companies, that a support takes a wrong direction and finds itself behind skirmishers totally strange to it, so that the captain who is with the support has at the very beginning of the action only one of his own sections in hand. It should be an invariable rule with the larger bodies of troops, always to extend whole companies. The small volleys are omitted in example B, supports themselves making no attack, but following the rush of the skirmishers.

The cases in which infantry can still act in compact forms, thus above all the movements of masses under artillery fire, require a constant and careful exercise in close order evolutions. Any neglect in this respect would not be justifiable. Even the attack of greater and smaller bodies in close order, the charge with a cheer should be practised, because, however unlikely, as we have shown, they may take place ; but such offensive movements in close order should only be practised over very short spaces, as they will only take place in case of a surprise of some sort. Again, we require a company to be able to form line, so that, if good cover should offer itself, it may be able to form up behind it, and to open independent fire ; lastly, we must know how to form square in case we are threatened with serious cavalry attacks. Our practice in close order should, in our opinion, be directed to the foregoing points.

We have said enough about the relations between skirmishing and fighting in close order. Fighting in open order should be represented as the principal part, quite the decisive part of the action of infantry in battle, and especially open order fighting on a large scale, the skirmishing of masses.

Our conduct in attack and defence may easily be guided by the maxims we have laid down. On the offensive: a strong deployment of skirmishers and, if possible, flanking movements. The skirmishers should be in force from the very beginning, so that we may be as seldom as possible under the necessity of bringing forward reinforcements, always an occasion of great loss. The larger groups should be concentrated behind separate accidents of ground, all the tract in front of them being exposed to their cross fire. It will very rarely happen that such accidents of ground do not occur, as undulations, hollows, ditches. There is no greater mistake perpetrated at drill than to make the line of skirmishers close to the right or left when a reinforcement comes up; yet one often sees it done. It does not signify whether a space of ground be occupied or not, as long as it is under fire at an effective range. Then we move on by successive rushes; on open ground we run on and lie down alternately. We do not begin the actual fight over 400 paces. After some time, one can notice if the enemy's fire has diminished, if he is shaken, or has shot away all his ammunition. Then comes the rush. If the ground admits of it, the supports close up nearer to the front before hand.

If the enemy holds his ground obstinately for any time, the nearest supports must be extended to reinforce, and then the next line must draw nearer; in small bodies like a battalion, this will be the main body of the first line: in larger bodies, it will be the second line. After the fire has worked a little more, the attack must be tried, but always by the skirmishers and the supports following them. This rush upon a determined enemy is about the hardest task in our fights of the present day, and is all the more likely to succeed, the more carefully and precisely the soldier is made acquainted throughout the whole course of his military education with the nature of actual warfare.

He must be taught that the formation above all others for fighting is that of skirmishers, he must understand that to waver and run back is certain death.

The rapid independent fire of the skirmishers, and, if possible, of bodies in close order, pursues the enemy as he flees.

In roads and villages, as the Prussian official instructions justly remark, we should try at once to gain the further border.

On the defensive : occupy in force the actual line of defence with strong bodies of skirmishers. This is also enjoined by the official instructions. Advanced posts should only be strongly occupied when they are particularly tenable.

The strength of the line of skirmishers makes it frequently possible to place the supports in echelon behind the flanks, to guard against turning movements, as these will be the chief manœuvres of the assailant now-a-days, in consequence of the heavy front fire which he has to encounter. In good positions it will often be possible to bring the supports close up to the skirmishers. An attack pushed home should not be met with volleys, but with a new thick chain of skirmishers followed immediately by the support.

The chief argument against volleys at such a moment is that they have little effect upon skirmishers who are the first to come up. But if you wait till the enemy's supports are visible, the party in close order, which is intended to fire the volleys, would be for some time exposed to the skirmishers' fire, and would be a heap of corpses before it got a chance of acting.

If a support finds an opportunity of acting as a compact body when the enemy is attacking its position, an immediate charge for a short distance will be more effective than volleys. The counter attack, leaving your own position, has, however, now become a ticklish matter, and should, at most, be made only to a short distance. It is a serious undertaking, because it leads you at once into the enemy's fire without cover, and thus brings you into the most awkward position of modern warfare. You should think twice before you leave your shelter (from whence you are pouring a destructive fire) for this purpose.

The instructions for a soldier on the defensive are simply 'Don't go away ; then the enemy *will* go away.'

We know well how often things turn out differently to what one expects, and Ducrot showed at Champigny that fine phrases do not give victory; but we think it very useful to impress upon the simple understanding of the soldier in one short sentence the quintessence of our tactics, and we believe that the lesson will do him a thousand times more good than the best official instructions about advancing and retiring.

In spite of the powerful effect of fire, we cannot assert that the square has become absolutely useless. If cavalry in extended order attack skirmishers in flank, the latter will often have nothing left but to form square. But if cavalry attacks in front or even obliquely, the skirmishers will find it quite sufficient to draw up in line, if there is not sufficiently good cover for them to remain extended.

We should, therefore, have two signals for this operation when at drill; that is to say, one signal, 'Look out for cavalry,' followed by the line formation; another, 'Form columns,' followed by the square.

ARMS AND EMPLOYMENT OF FIRE.

The Chassepot showed itself superior to the needle-gun in rapidity of fire, in lowness of trajectory, in portability, in its smaller calibre, in penetration, finally in lightness and handiness; to which last quality the fact of the bayonet not being constantly fixed contributes. The needle-gun has the advantage of simple lock construction and better sighting, it makes fewer miss-fires, it fouls little (the Chassepot much), and it remains serviceable after having lain in water several days.

The above-named advantages of the Chassepot doubtless make the adoption of a new firearm necessary, in which the merits of the two rifles should be combined as far as possible. We have no intention of entering upon technical questions, as to which is best, the Werder or some other arm, the metal or the needle-gun cartridge. We will only say a few words on the tactical branch of the subject.

When the French in 1870 saluted us with rifle-balls at 2,000

paces distance, this produced astonishment first, and soon after the desire to be able to return the compliment.

Some people even spoke, quite forgetful of our old tactics, of adopting the principle of long range shooting. But soon the matter was examined more coolly, and it was admitted that though the French certainly annoyed us by these long shots from 800 to 1,500 paces, they really did us little harm, as we have already mentioned. When we suffered serious loss at the longer ranges, it was under circumstances eminently favourable for the French, as, for instance, perfectly open ground, and too compact formations on the part of the Germans. It is evident that the superior range of a firearm gives its possessor an advantage at certain times, as on outpost before Paris and Metz, when the French had the power of making themselves unpleasant by peppering our pickets, whilst the latter could not return the compliment effectually with their arm. It is therefore quite desirable that our future rifle should carry further and give a lower trajectory.

It is to be hoped that we shall never dream of adopting the French plan of long shots, so as to try and make the ground unsafe 1,000 yards off; in other words, of firing into the air.

It appears, however, to be wished that the point blank range[1] of the new pieces should be greater than that of our present one.

The use of the fixed sight, it is said, should be extended to 400 or 500 paces, i.e. as far as possible.

It is doubtful how far there would be an advantage in extending the present point blank range of the needle-gun (230 paces). The actual fighting is done now by skirmishers, as we have already often stated. You seldom get a chance of seeing a party in close order; you may at the utmost get a shot now and then at a clump of skirmishers who have got huddled up together for some reason or other. As for a single man, you cannot aim at him, with much chance of hitting, beyond 300 paces, and then

[1] 'Kernschuss.' Point blank range is, we are aware, not a scientific expression. But it expresses concisely to the unscientific the author's meaning, viz. the limit of the first graze when using the lowest backsight.—TRANSLATOR.

only if he is not under cover. We must further take into consideration that, in spite of our good training, men will aim but little at an individual (unless they happen to be in an excellent defensive position), but will fire in the direction of the flame and smoke which mark the enemy's line of skirmishers.

But even for this a certain aim is necessary, if you don't go in entirely for flukes. And this aim depends above all upon judging the distance, that is, upon the eye. This fact is nothing new, yet we shall do well always to recall it to our remembrance; for whenever a new arm is introduced this false theory of long shots is sure to crop up again, perhaps under a new form, but certainly with fresh persistence, and it is our duty always to oppose it.

If the saying 'New arms, old tactics' has been confuted, one may yet say decidedly, with reference to the use of musketry, 'New arms, the same men.'

The furthest distance at which we may fire with any fair hope of success on a line of skirmishers lying down or under cover, is from 350 to 400 paces.

We are of opinion that the point blank sighting (when we are supposed to aim at the middle of a man's body), should be fixed at 300 paces: no further. It is quite true that men often enough pop away at one another at 400, 500, 600, 700 paces; and it is also true that, with the rapid fire from both sides, you find a great many killed and wounded in the line of skirmishers; but this sort of thing produces usually a so-called stationary musketry fight without much result. If we extend the point blank sighting to 400 or 500 yards, we must aim at the ground several feet before our man if he is lying down, when we come to closer quarters say to within 150 or 200 paces, (which will often happen, in spite of the breechloader, in wooded or enclosed countries). We should then be at a disadvantage. Under such circumstances the French always lost many more men than we did, notwithstanding their Chassepot. The needle-gun was, at close quarters, fully equal to the latter, in spite of its quicker fire.

The idea of using the fixed sight, at all events as far as pos-

sible, so that with a point blank range of 400 paces one might use the same sight up to 500 or 550 paces, seems at first sight practical, and has in fact its advantages, particularly as one knows that men often omit to alter their sight in the heat of action. If we suppose our adversary to be standing bolt upright at this distance, we can make sure at least of hitting his legs by aiming at the middle of his body ; but the case is different if he is lying down, for we can only then hit him by aiming several feet above him, which is the most difficult sort of shot. As your adversary would be very often lying down, the practical advantage of being able to use the fixed sight to a great distance would be much restricted. And if you have a gun in your hand sighted after this fashion, you will be under a strong temptation in battle to forget the old golden rule of reserving your fire for short ranges, that is, for distances over which the eye is commonly reliable, say up to 350 paces, and to accustom yourself to taking long shots which will never produce great effect. These reasons appear to us sufficient for fixing the point blank range at 300 paces. The fixed sight can thus be used with some convenience up to 350 or 400 paces. If you wish exceptionally to fire beyond that range, the elevating sight must be used.

Whatever arm is adopted should be light ; at the outside, as long as the present fusilier rifle,[1] and with no permanently fixed bayonet. The latter is a particularly important point. The Chassepot may be safely taken as a model of handiness.

Cases in which volleys may still now and then be fired are :

1. Against cavalry.

2. If it is possible to take the enemy completely by surprise, for instance at night, or in a thick fog.

These few cases justify us in practising volley firing at target practice to a certain extent.

Volleys serve also to test the steadiness of the men ; only time must be given them to take aim, and importance must not alone be attached to a simultaneous fire.

[1] Without the bayonet, 4′ 2″, with the bayonet, about 5′ 10″ (English measure).—Translator.

Independent firing by troops in close order which can be employed in certain cases (see above) requires much practice. A light touch should be kept.

The fire of skirmishers will always be the most effective. It is of consequence that one should be able to stop the fire at will, so as to proceed to the attack. For this purpose we want a 'storming signal,' on which fire would cease at the point required, and the decisive assault would follow. The skirmishers' fire would be all the more completely under control, if we train our men thoroughly to taking advantage of the ground, and in 'battle-discipline,' having therefore not to trouble ourselves about these things in action.

For soldiers to be able to make a rapid change of formation, to extend quickly, to rally speedily, to be able to fight under all circumstances, whether under their own officers in the usual tactical connection, or mixed up with men of other corps under strange officers, these are the cardinal points of our tactics and training. We can only attain this standpoint if we speak out quite clearly in our instructions and regulations upon the nature of the warfare of the present day, and if we banish from our field exercises and manœuvres whatever is not in keeping with it.

In many respects there is too much writing now-a-days. But it has always answered to an army which desires to be superior to its adversaries, to make the most of former experience; and we have already seen how the lessons of 1866 profited us in 1870. Thus even imperfect writings will have their worth, if they show a desire for improvement, and abstain from intemperate criticism. What is really hurtful, moreover, vanishes to the winds before a nation and an army of thinking men.

May the present work at least contribute to produce reflection upon the great events of the past, to the benefit of our tactical instruction.

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